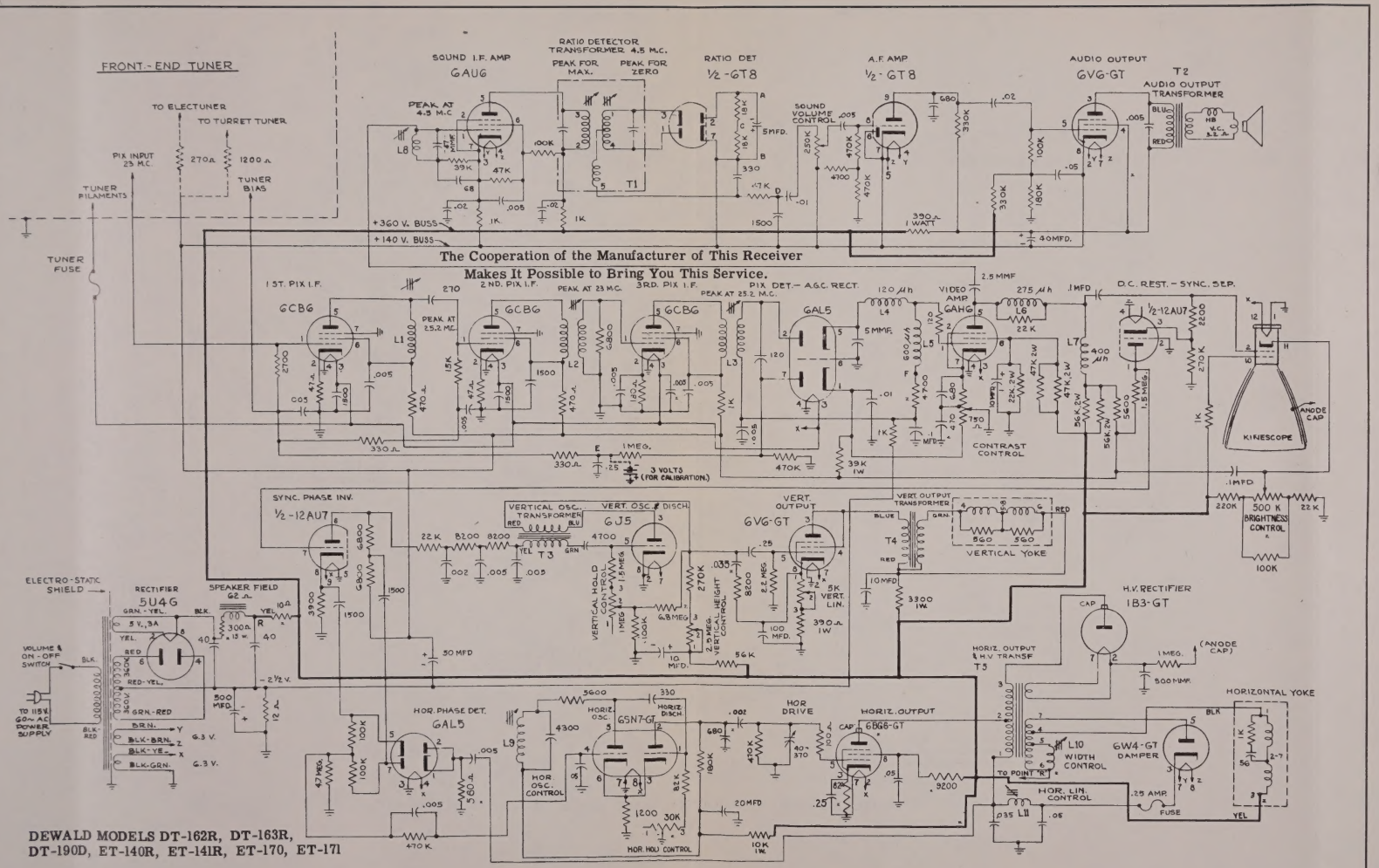
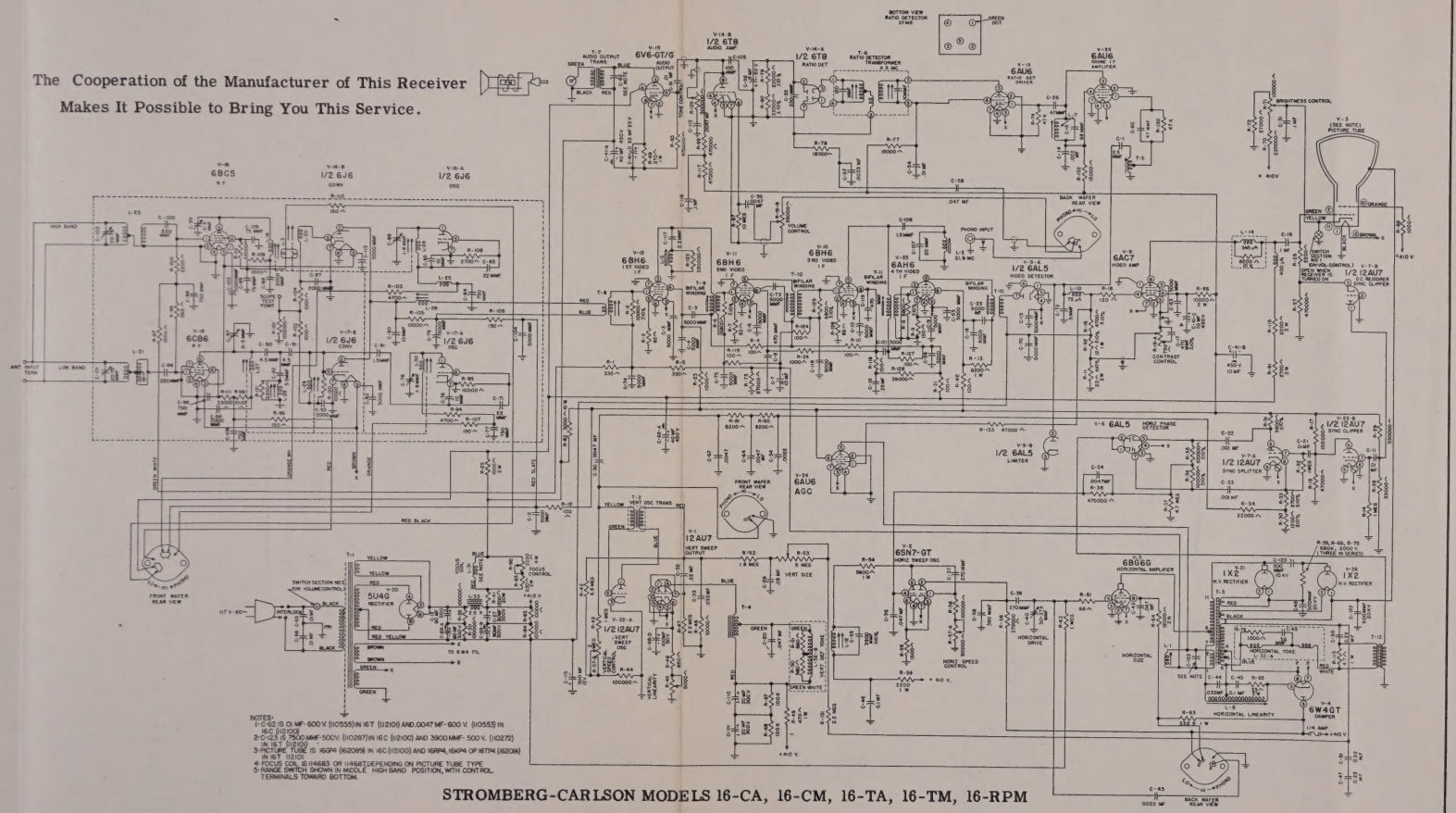
CONTENTS

TRADE NAME	MODEL	SET AND FOLDER No.
Aircastle	5022	123-2
Andrea	TVL-12 Tel. Rec.	123-3
Dewald	DT-162R, DT-163R, DT-190D, ET-140R, ET-141R, ET-170, ET-171 Tel. Rec.	123-1A
General Electric	14C102, 14C103, 14T2, 14T3, 16C103, 16C110, 16C111, 16C113, 16C115, 16C116, 16C117, 16T1, 16T2, 16T3, 16T4, 17C101, 17C102 Tel. Rec.	123-4
General Electric	752, 753	123-5
Hudson	332-H	123-6
Knight	5H700	123-7
Masco	T-16	123-8
Meissner	9AJ	123-9
Packard-Bell	2101, 2102, 2105, A, 2202, 2204, 2602 Tel. Rec.	123-10
Philco	51-T1443PL, 51-T1443PM, 51-T1443PW Tel. Rec.	123-11
Raytheon	C-1401, M-1402, M-1403, M-1404 (Ch. 14AX21) Tel. Rec.	123-12
Reelest	C1A Recorder	123-13
Stromberg-Carlson	16-CA, 16-CM, 16-RPM, 16-TA, 16-TM Tel. Rec.	123-1A


FRONT-END TUNER
TO ELECTUNER
TO TURRET TUNER
PIX INPUT 25 MC.
270 Ω
1200 Ω
TUNER BIAS
TUNER FILAMENTS
TUNER FUSE
SOUND I.F. AMP
6AU6
PEAK AT 4.5 M.C.
RATIO DETECTOR TRANSFORMER 4.5 M.C.
PEAK FOR MAX.
PEAK FOR ZERO
T1
RATIO DET
½-6T8
A.F. AMP
½-6T8
SOUND VOLUME CONTROL
AUDIO OUTPUT
6V6-GT
T2
AUDIO OUTPUT TRANSFORMER
+360 V. BUSS
+140 V. BUSS
The Cooperation of the Manufacturer of This Receiver
Makes It Possible to Bring You This Service.
1ST. PIX I.F.
6CB6
2ND. PIX I.F.
6CB6
3RD. PIX I.F.
6CB6
PEAK AT 25.2 M.C.
PEAK AT 23 M.C.
PIX DET.- A.G.C. RECT.
6AL5
VIDEO AMP
6AH6
D.C. REST. - SYNC. SEP.
½-12AU7
KINESCOPE
ANODE CAP
CONTRAST CONTROL
BRIGHTNESS CONTROL
3 VOLTS (FOR CALIBRATION.)
SYNC. PHASE INV.
½-12AU7
VERTICAL OSC. TRANSFORMER
T3
VERT. OSC. & DISCH.
6J5
VERT. OUTPUT
6V6-GT
VERT. OUTPUT TRANSFORMER
T4
VERTICAL YOKE
VERTICAL HOLD
VERTICAL HEIGHT
5K VERT. LIN.
ELECTRO-STATIC SHIELD
RECTIFIER
5U4G
SPEAKER FIELD
62 Ω
VOLUME & ON-OFF SWITCH
TO 115 V. 60~ AC POWER SUPPLY
H.V. RECTIFIER
1B3-GT
CAP.
HORIZ. OUTPUT & H.V. TRANSF.
T5
(ANODE CAP)
HORIZONTAL YOKE
HOR. PHASE DET.
6AL5
HORIZ. OSC.
6SN7-GT
HORIZ. DISCH.
HOR. OSC. CONTROL
HOR. HOLD CONTROL
HOR DRIVE
HORIZ. OUTPUT
6BG6-GT
L10 WIDTH CONTROL
6W4-GT DAMPER
HOR. LIN. CONTROL
.25 AMP FUSE
TO POINT "R"
DEWALD MODELS DT-162R, DT-163R,
DT-190D, ET-140R, ET-141R, ET-170, ET-171

The Cooperation of the Manufacturer of This Receiver Makes It Possible to Bring You This Service.

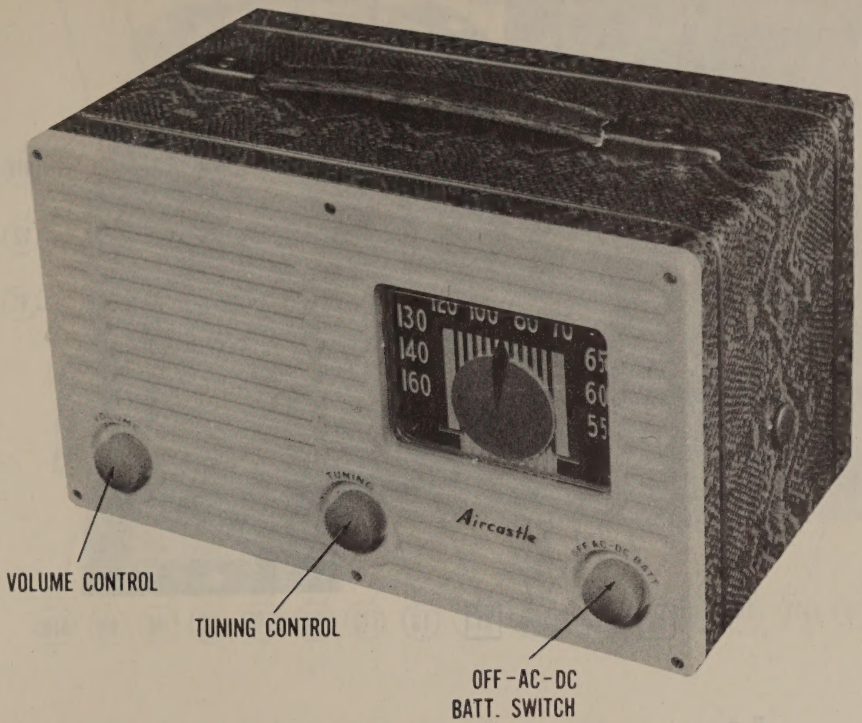


STROMBERG-CARLSON MODELS 16-CA, 16-CM, 16-TA, 16-TM, 16-RPM

PRELIMINARY DATA
The data contained in this folder is published in advance of regular PHOTOFACT Coverage

SET 123 FOLDER 1A

© Howard W. Sams & Co., Inc. 1951



AIRCASTLE
MODEL 5022

AIRCASTLE
MODEL 5022

AIRCASTLE MODEL 5022

TRADE NAME	Aircastle, Model 5022
SUPPLIER	Spiegel Inc., 1061 W. 35th St., Chicago, Illinois
TYPE SET	Three Power Operated Portable Superheterodyne Receiver with Loop Antenna
TUBES(FOUR)	Types 1R5 Converter, 1U4 IF Amp., 1U5 DET-AVC-AF, 3V4 Power Output
POWER SUPPLY	110-125 Volts AC-DC or 3 Volts "A" Supply and 67.5 Volts "B" Supply
RATING	.14 Amp. at 117 Volts AC or 150MA at 3 Volts DC and 9MA at 67.5 Volts DC
TUNING RANGE—BROADCAST	540-1650KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn tuning cap fully closed and set pointer parallel with base of dial.

Use battery power when available. If AC power is used, use an isolation transformer when available. If not, connect a .1MFD capacitor in series with low side of the signal generator and B-.

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to antenna section of tuning gang. Low side to B-.	455KC (400 ∿ Mod.)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If AC power is used without an isolation transformer reduce dummy antenna to 200MMF to reduce hum modulation.
2.	.1MFD	"	1650KC	"	"	A5	"
3.		Loop	1400KC	Adjust for max. output	"	A6	Replace set in cabinet. Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

HOWARD W. SAMS & CO., INC. • Indianapolis 1, Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1951 by Howard W. Sams & Co., Inc., Indianapolis, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

PARTS LIST AND DESCRIPTIONS

AIRCASTLE MODEL 5022

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: AIRCASTLE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	Converter	1R5	1R5	7AT	
V2	IF Amp.	1U4	1U4	6AR	
V3	DET-AVC-AF	1U5	1U5	6BW	
V4	Power Output	3V4	3V4	6BX	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: AIRCASTLE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	150	EC-14	PRS150/40-40-40		EDL42215		TVA-3448	Filter-Red
B	40	150							Filter-Blue
C	20	150							Filter-Green
C2	70	10	EC-6	PRS12/100		BRH121A		TVA-1130	Fil. Bypass
C3	.05	400	PC-2	P488-05	DF-503	PTE4S5		4TM-S5	AVC Filter
C4	100	500	MC-2	1468-0001	D6-101	5W5T1	GP1K-100	1FM-31	Osc. Grid Cap.
C5	.01	400	PC-7	P488-01	D6-103	PTE4S1	821-01	4TM-S1	Decoupling
C6	.01	400	PC-7	P488-01	D6-103	PTE4S1	821-01	4TM-S1	IF Grid Filter
C7	.1	200	PC-3	P288-1	DF-104	PTE4P1		2TM-P1	Fil. Bypass
C8A	150		MC-7	S1150	D6-151	5W5T15	GP2K-150		Diode RF Filter
B	2000			BPD-002	DD-202	PTE6D2	801-002		Audio Coupling
C	5000			BPD-005	DD-502	PTE6D5	811-005	34C4	AF Amp. Screen
D	100			S1100	D6-101	5W5T1	GP1K-100		AF Amp. Plate
E	5000			BPD-005	DD-502	PTE6D5	811-005		Audio Coupling
C9	.005	600	PC-6	P688-005	D6-502	PTE6D5	811-005	6TM-D5	Output Plate Bypass
C10	.1	400	PC-8	P488-1	DF-104	PTE4P1		72P52	Line Isolation
C11	.05	400	PC-5	P488-05	DF-503	PTE4S5		4TM-S5	Line Filter

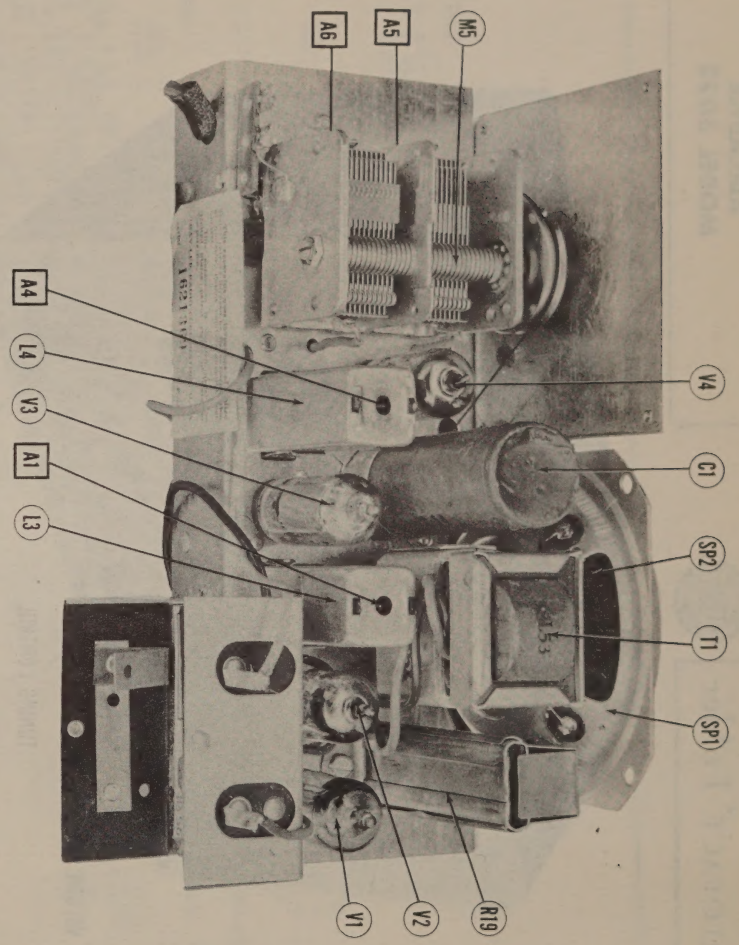
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIRCASTLE PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	1 Meg.	½	VC-11	Q13-137	AM-63-Z	BSK-70	Volume control
B	Shaft			Not Req.	KSS-3	Not Req.	Attach to R1A per instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIRCASTLE PART No.	IRC PART No.	IDENTIFICATION CODES
R2	220KΩ	½	IR-20	BTS-220K	Osc. Grid
R3	3.3 Meg.	½	IR-23	BTS-3.3 Meg.	AVC Network
R4	10KΩ	½	IR-37	BTS-10K	Decoupling
R5	10 Meg.	½	IR-3	BTS-10 Meg.	IF Grid Filter
R6	82KΩ	½	IR-31	BTS-82K	Diode Filter
R7	10 Meg.	½	IR-3	BTS-10 Meg.	AF Grid
R8	3.3 Meg.	½	IR-23	BTS-3.3 Meg.	AF Screen
R9	1 Meg.	½	IR-12	BTS-1 Meg.	AF Plate
R10	2.2 Meg.	½	IR-13	BTS-2.2 Meg.	Output Grid
R11	470Ω	½	IR-1	BTS-470	Filament String
R12	33Ω	½	IR-17	BW-½-33	Filament Dropping
R13	270Ω	½	IR-33	BW-½-270	Filament Dropping
R14	620Ω	½	IR-39		Filament String
R15	270Ω	½	IR-33	BW-½-270	Bias Network
R16	33Ω	½	IR-17	BW-½-33	Surge Limiter
R17	47Ω	1	IR-41	BW-1-47	Filter
R18	3900Ω	1	IR-40	BTA-3900	Filter
R19A	1050Ω	5	WR-7		Filter-Wire Wound
B	1050Ω				Filament Dropping
R20	220KΩ	½	IR-20	BTS-220K	Line Isolation

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		AIRCASTLE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T1	5000Ω	3.6Ω	350Ω	.6Ω	Part of SP1	A-3328 ①	A-3026 ①	RO-11 ①	① Bend tabs down and mount on original bracket.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			AIRCASTLE PART No.	VIKING PART No.	QUAM PART No.	
	FIELD	V. C. IMP.				
SP1	PM	3.6Ω	SPK-16	35J4	3A07 ②	② Remount output transformer.
	CONE DIA.	V. C. DIA.				
SP2	3 1/4"	9/16"				

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA	
		PRI.	SEC.	AIRCASTLE PART No.	MEISSNER PART No.
L1	Loop Ant.	1.5Ω		LL-23	
L2	Osc. Coil	.3Ω	1Ω	LO-8	14-1060
L3	1st IF	22Ω	22Ω	LI-5	16-6668
L4	2nd IF	22Ω	22Ω	LI-5	16-6669

SELENIUM RECTIFIER

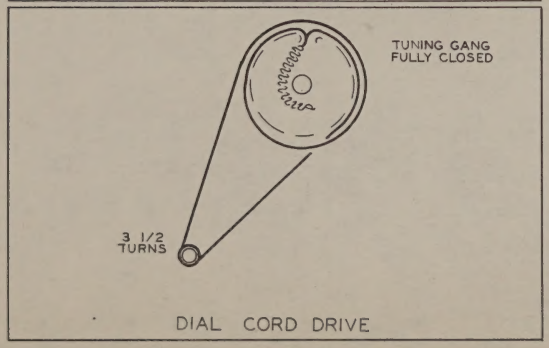
ITEM No.	RATING	REPLACEMENT DATA			NOTES
	CURRENT	AIRCASTLE PART No.	SYLVANIA PART No.	SELETRON PART No.	
M1	.060ADC	SR-2	NB-5	5M4	

BATTERIES

ITEM No.	VOLTAGE	AIRCASTLE PART No.	REPLACEMENT DATA						INSTALLATION NOTES
			EVEREADY			BURGESS			
			"A"	"B"	"A-B"	"A"	"B"	"A-B"	
M2	.3V "A"		950			2R			2 required
M3	67.5V "B"			467			XX45		

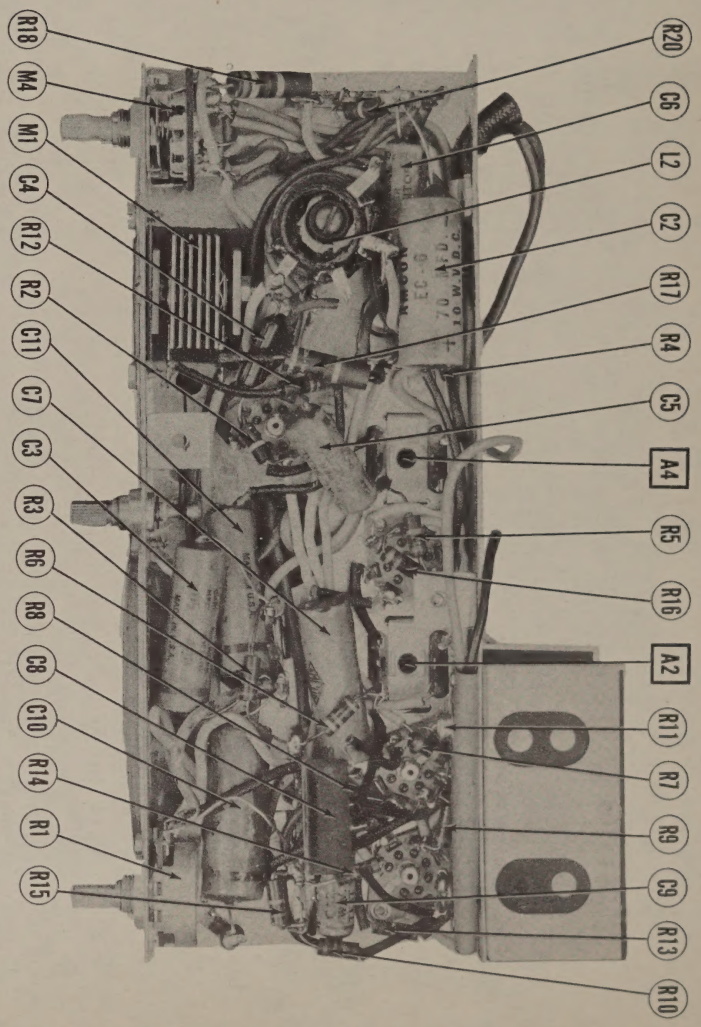
MISCELLANEOUS

ITEM No.	PART NAME	AIRCASTLE PART No.	NOTES
M4	Switch	SW-8	AC/DC-Battery
M5	2 Gang Var. Cap.	GC-6	(24-449MMF, 32-195MMF)



DIAL CORD DRIVE

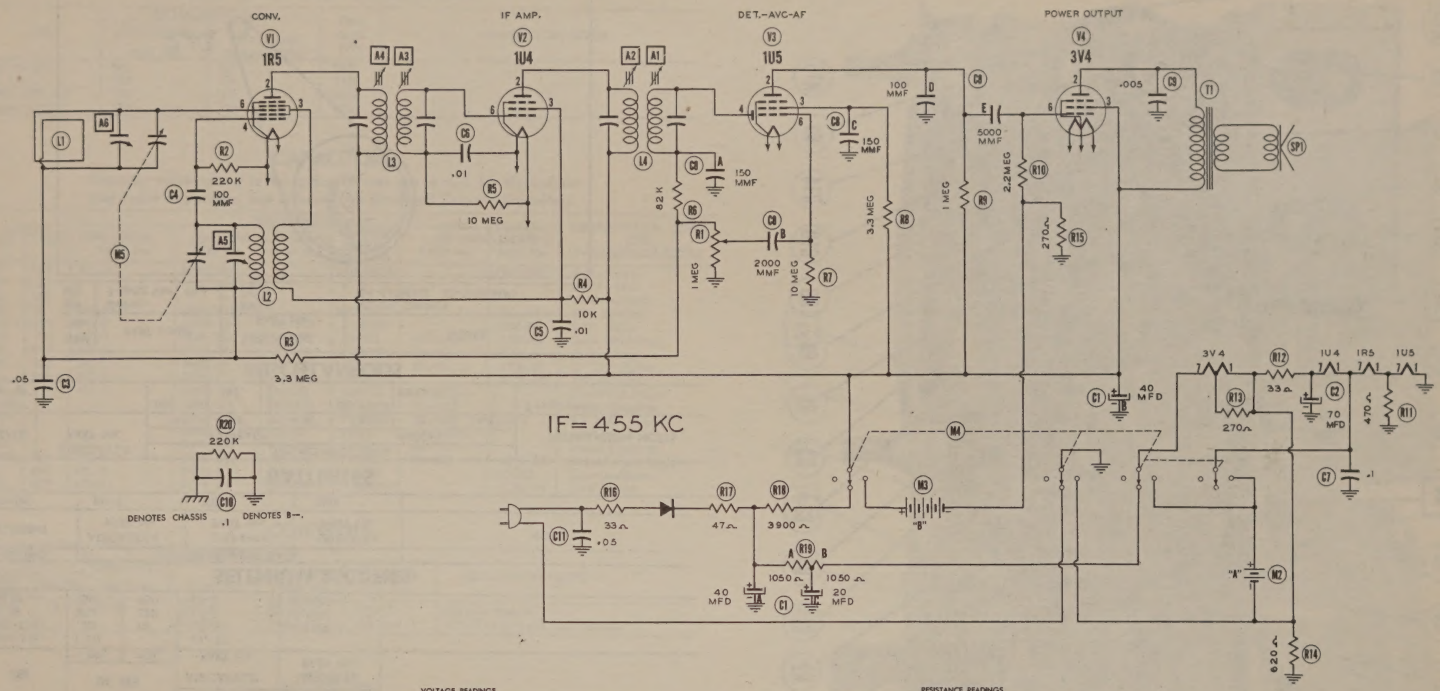
CHASSIS—BOTTOM VIEW



SET 123 FOLDER 2

AIRCASTLE MODEL 5022

AIRCASTLE MODEL 5022



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	1R5	1.4VDC	85VDC	60VDC	8-10VDC	1.4VDC	0V	2.7VDC
V 2	1U4	2.7VDC	85VDC	60VDC	5.6VDC	2.7VDC	.1VDC	4VDC
V 3	1U5	0V	5.2VDC	4.9VDC	0V	0V	0V	1.4VDC
V 4	3V4	5.6VDC	85VDC	85VDC	0V	7VDC	0V	8.5VDC

§ TAKEN WITH VACUUM TUBE VOLTMETER

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	1R5	*	†4KΩ	††4KΩ	22KΩ	*	4.3 Meg.	*
V 2	1U4	*	†4KΩ	††4KΩ	*	*	10 Meg.	*
V 3	1U5	*	†† Meg.	†3.3 Meg.	1 Meg.	Inf.	10 Meg.	*
V 4	3V4	*	†4.3KΩ	†4KΩ	Inf.	*	2.2 Meg.	*

V AND R TAKEN IN AC-DC POSITION

† MEASURED FROM OUTPUT OF M1

* DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE

THE COOPERATION OF THE MANUFACTURER OF THIS
RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

©Howard W. Sams & Co., Inc. 1951

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

PHOTOFACT* Folder

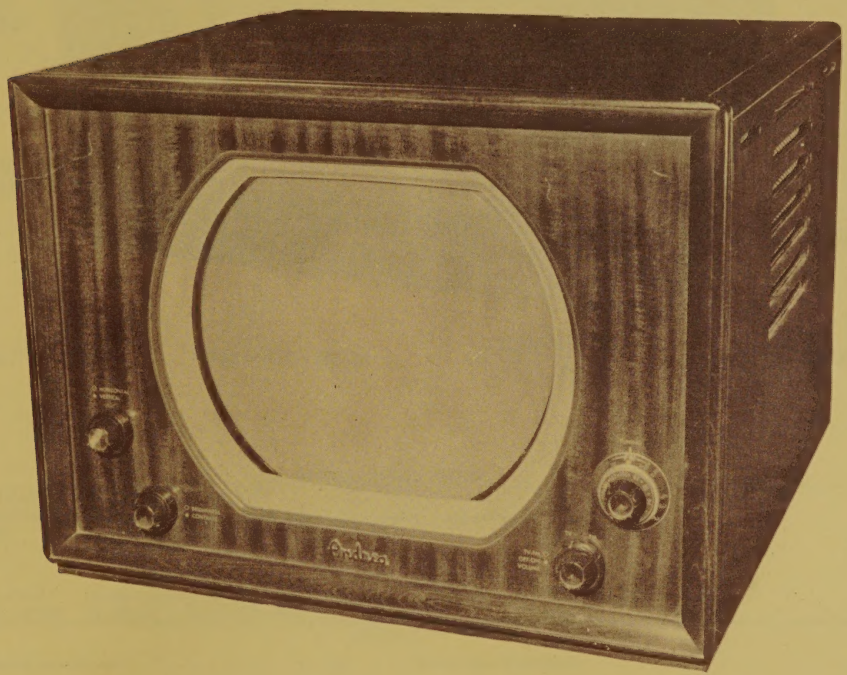
ANDREA MODEL

TVL-12

IMPORTANT FILING NOTICE

The contents for this envelope will be found among the last folders in this complete set of folders . . . *unless* it has been purchased as part of a *complete* volume of PHOTOFACTS assembled in a DeLuxe Binder.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.

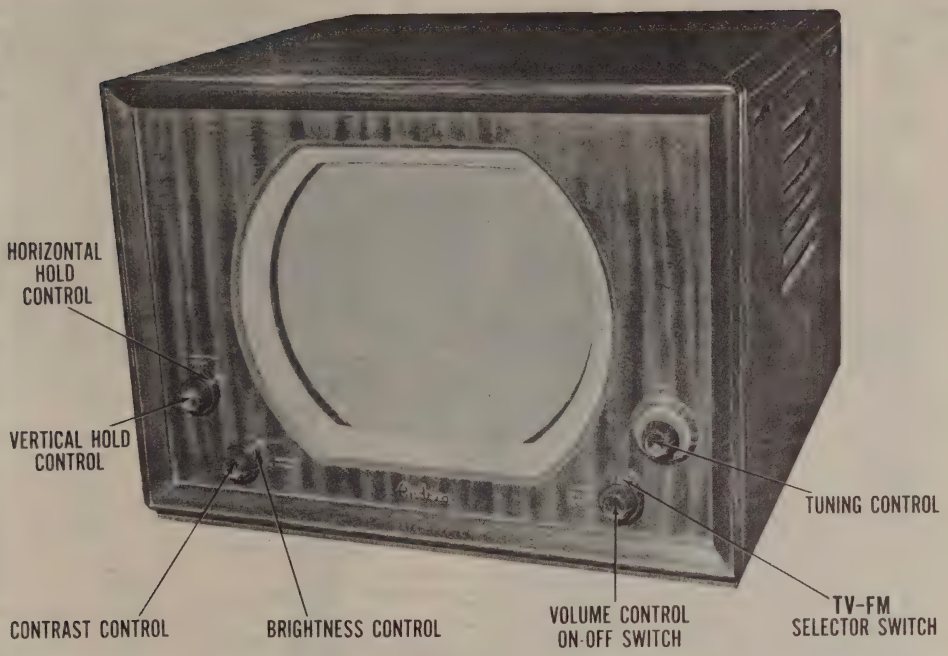


ANDREA MODEL
TVL-12

HOWARD W. SAMS & CO., INC. • Indianapolis, Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1951 by Howard W. Sams & Co., Inc., Indianapolis, Indiana, U.S.A. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc."
Printed in U. S. of America

Date 1/51 Set No. 123—Folder No. 3



ANDREA
MODEL TVL-12

ANDREA MODEL TVL-12

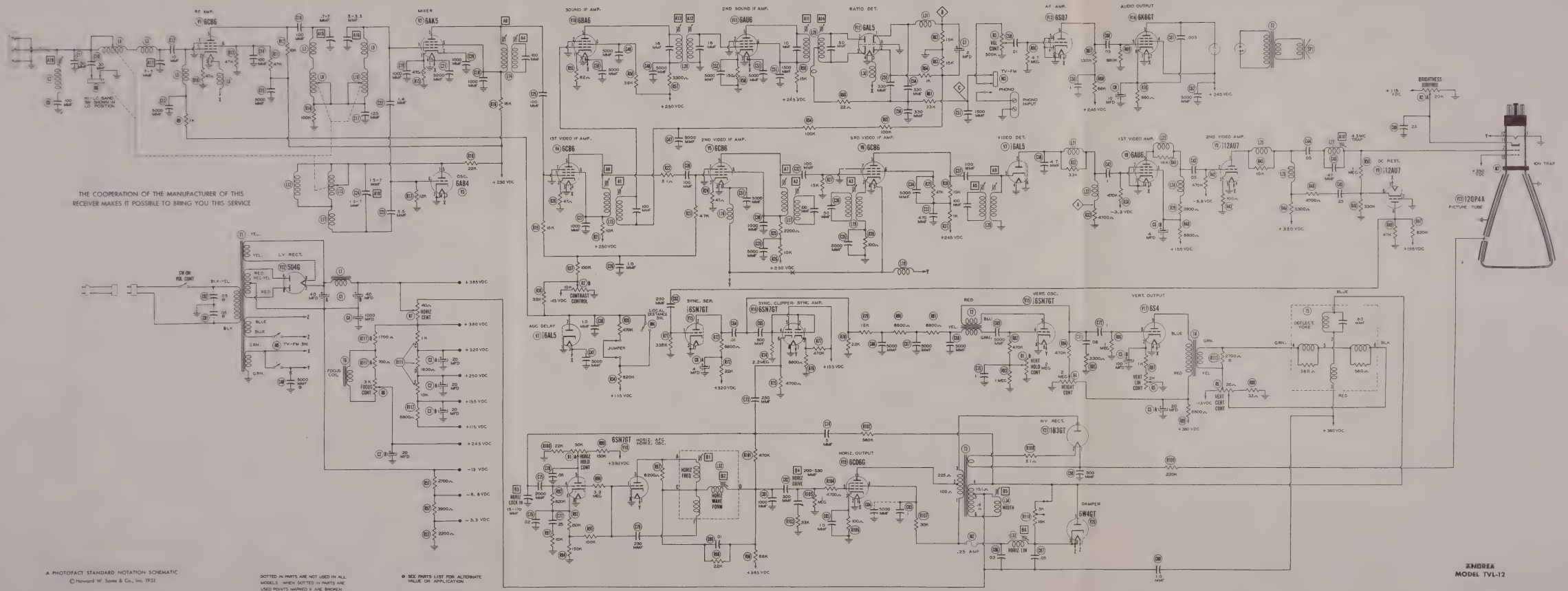
TRADE NAME	Andrea Models TVL-12
MANUFACTURER	Andrea Radio Corp., 27-01 Bridge Plaza North, Long Island City, N.Y.
TYPE SET	Television Receiver
TUBES	Twenty Three
POWER SUPPLY	110-120 Volts AC-60 Cycle
TUNING RANGE	44-216 MC (Continous Tuning)
RATING	2.2 Amp. @ 117 Volts AC

INDEX

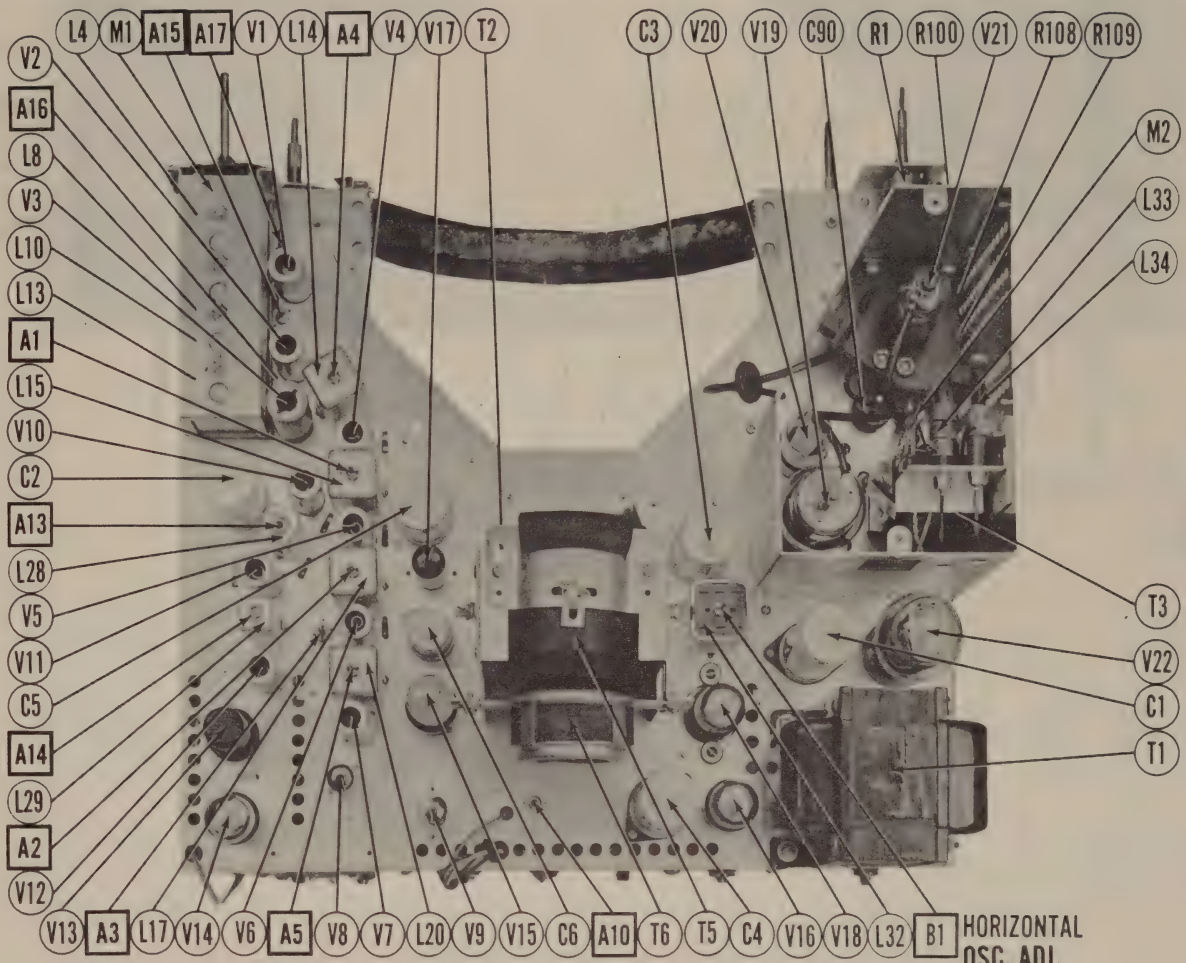
Alignment Instructions 6, 7
Disassembly Instructions 10
Horizontal Sweep Circuit Adjustment 10
Parts List And Description 12, 13, 15
Photographs
Cabinet - Rear View 10
Capacitor And Alignment Identification 4, 9
Photographs (Continued)
Chassis - Top View 3
Resistor And Inductor Identification 11, 14
Schematic 2
Tube Placement Chart 5
Voltage And Resistance Measurements 8

HOWARD W. SAMS & CO., INC. • Indianapolis 1, Indiana

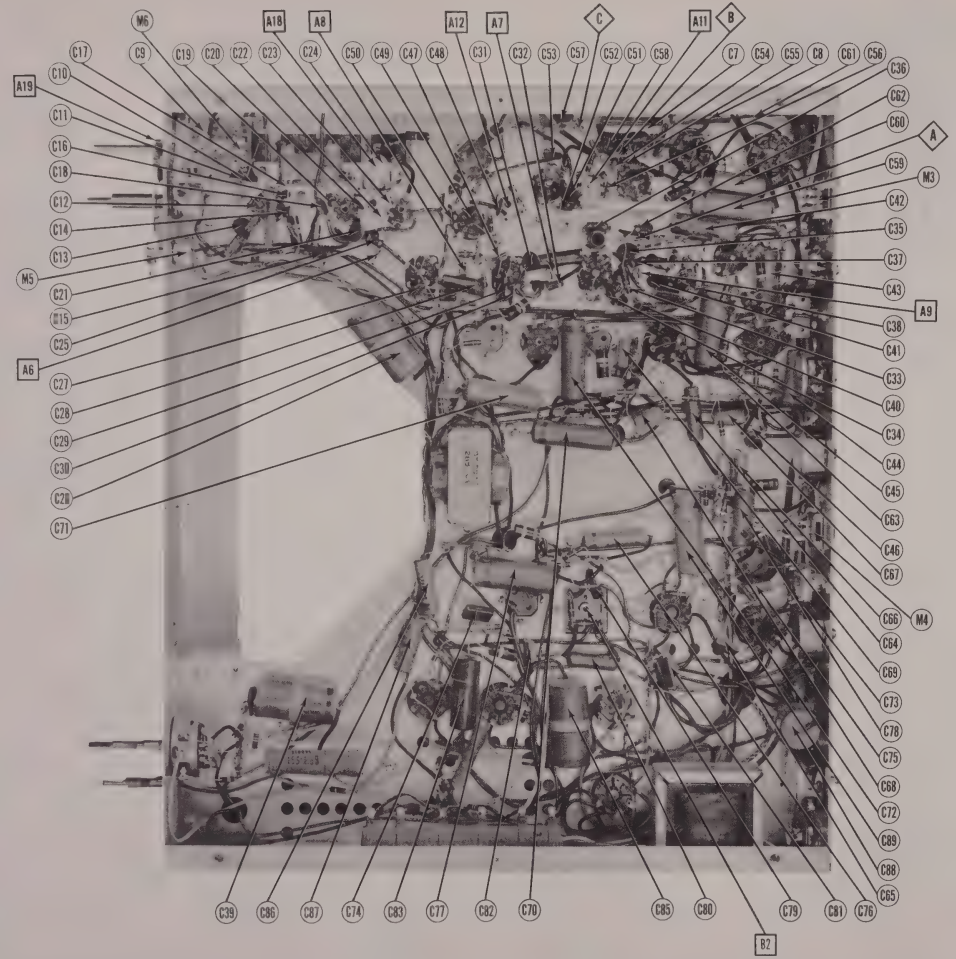
"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed."
"Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1951 by Howard W. Sams & Co., Inc., Indianapolis, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America



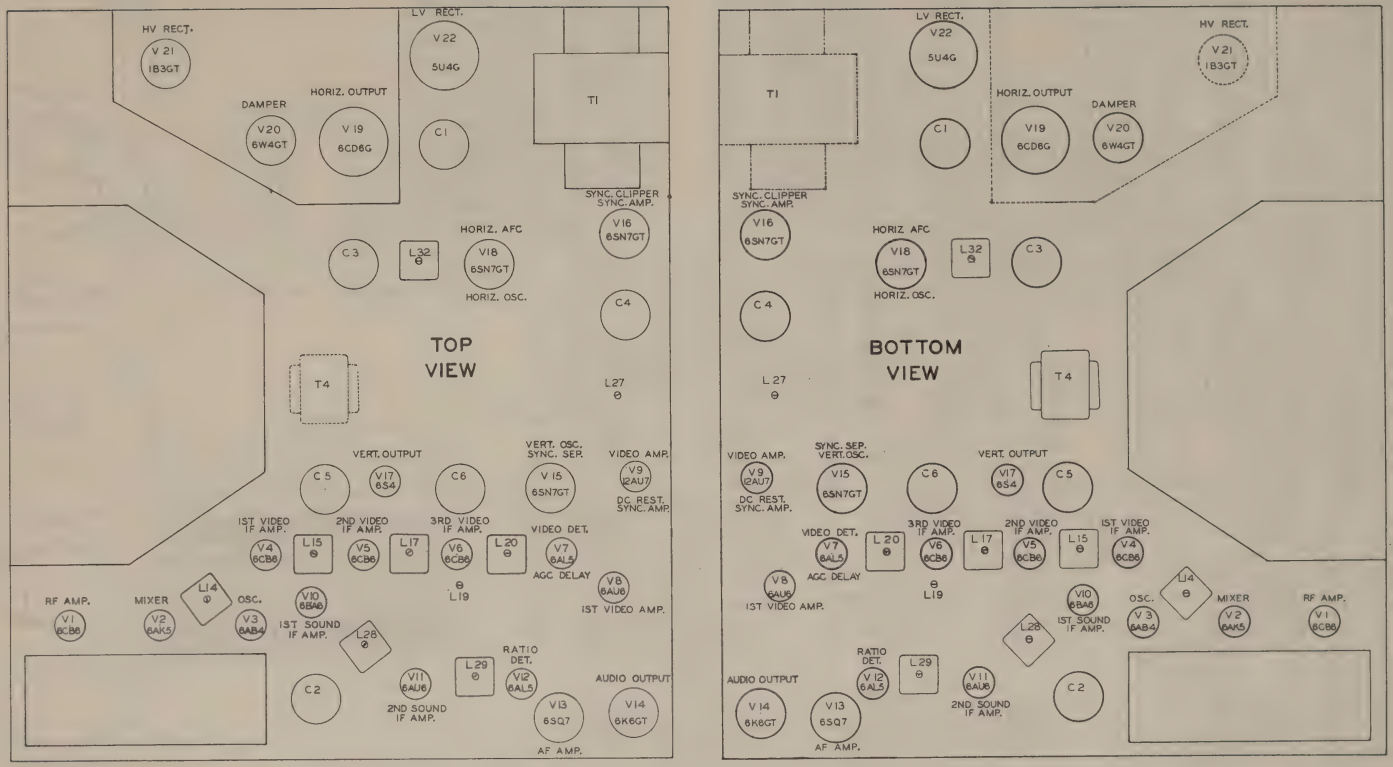
ANDREA
MODEL TVL-12



CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION



TUBE PLACEMENT CHART

ANDREA
MODEL TVL-12

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The end of the high voltage lead should be securely taped and dressed away from the chassis. Do not remove the horizontal oscillator tube to disable the high voltage.

VIDEO IF ALIGNMENT

Remove the oscillator tube (V3) from its socket to prevent erroneous indications.
Connect the DC Probe of a VTVM to the center arm of the contrast control, common to chassis. Adjust the contrast control to read -5 volts on the VTVM.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Direct	High side to ungrounded tube shield floating over mixer tube (V2). Low side to chassis.	25MC (10MC SWP)	21.7MC	Any	Vert. Amp. to Point (A). Low side to chassis.	A1, A2, A3	Adjust for MINIMUM marker indication at the 21.7MC point on response curve.
2.	Direct	"	"	27.7MC	"	"	A4, A5	Adjust for MINIMUM marker indication at the 27.7MC point on response curve.
3.	Direct	"	"	21.7MC 23MC 26.2MC 27.7MC	"	"	A6, A7, A8, A9	Adjust for response curve similar to figure 1. The low frequency skirt is effected principally by A6 the high frequency skirt by A7 and A8 and the flatness of the center region by A9.

4.5MC TRAP ADJUSTMENT

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
4.	.01MFD	High side to pin 2 (Grid) of 12AU7 (V9). Low side to chassis.	Not used	4.5MC (400 ~ Mod.)	Any	Vert. Amp. to pin 2 of picture tube. Low side to chassis.	A10	Adjust for MINIMUM 400 ~ indication on scope.

SOUND IF ALIGNMENT

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
5.	.01MFD	High side to pin 1 (Grid) of 6BA6 (V10). Low side to chassis.	21.7MC (450KC SWP)	21.7MC	Any	Vert. Amp. to Point (B). Low side to chassis.	A11, A12, A13	Disconnect stabilizer capacitor C7. Adjust for maximum amplitude and symmetry as per figure 2.
6.	.01MFD	"	"	"	"	Vert. Amp. to Point (C). Low side to chassis.	A14	Reconnect capacitor C7. Adjust A14 so 21.7MC occurs at center of "S" curve as per figure 3. SLIGHTLY retouch A-11 for maximum amplitude and straightness of diagonal line.

RF AND MIXER ALIGNMENT

The RF and mixer portion of this receiver has been properly aligned at the factory and is very stable, alignment should not be attempted unless it is definitely known to be out of alignment.
A signal generator with a maximum of at least .5 volt output is required to align this tuner.
Remove the first video IF amplifier tube (V4) from its socket.
Solder a 220 ohm resistor between pins 5 and 6 of V3.
Connect the oscilloscope vertical input to pin 5 of V3.
Unsolder C12 from pin 1 of RF amp. (V1).
Turn the contrast control to maximum clockwise.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
7.	Direct	Across antenna terminals.	57MC (10MC SWP)	55.25MC 59.75MC	2	See instructions above	A15, A16	Adjust for response curve similar to figure 4.
8.	Direct	"	213MC (10MC SWP)	211.25MC 215.75MC	13	"	L7, L9	Adjust for response curve within the limits of figures 5 and 6. The coils are adjusted by unsoldering the junction of the crossed wires and changing the position of the junction on the wires. After adjustment resolder the junction.
9.	Direct	"	207MC (10MC SWP)	205.25MC 209.75MC	12	"		Check all channels for response within the limits of figures 4 and 5. If necessary make compromise adjustments of A15, A16, L7, and L9.
			201MC (10MC SWP)	199.25MC 203.75MC	11			
			195MC (10MC SWP)	193.25MC 197.75MC	10			
			189MC (10MC SWP)	187.25MC 191.75MC	9			
			183MC (10MC SWP)	181.25MC 185.75MC	8			
			177MC (10MC SWP)	175.25MC 179.75MC	7			
			85MC (10MC SWP)	83.25MC 87.75MC	6			
			79MC (10MC SWP)	77.25MC 81.75MC	5			
			69MC (10MC SWP)	67.25MC 71.75MC	4			
			63MC (10MC SWP)	61.25MC 65.75MC	3			
			57MC (10MC SWP)	55.25MC 59.75MC	2			

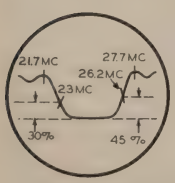


FIG.1

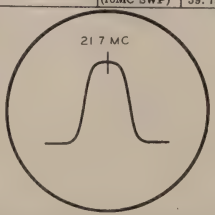


FIG. 2

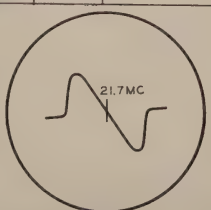


FIG.3

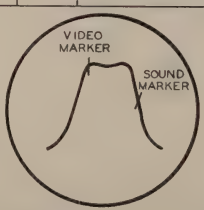


FIG.4

FIG.5

ALIGNMENT INSTRUCTIONS (CONT.)

ANTENNA ALIGNMENT

Resolder C12 to pin 1 of V1.
Leave the 220Ω resistor connected between pin 5 and 6 of V3.
Connect the sweep generator through a 10 db resistance attenuator having a characteristic impedance of 72 ohms.
Turn the contrast control to maximum clockwise.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
10.	10 db attenuator (see instructions above)	Across antenna terminals.	57MC (10MC SWP)	55.25MC 59.75MC	2	Vert. Amp. to pin 5 of V3. Low side to chassis.	A17	Adjust for response curve similar to figure 6.
11.	"	"	213MC (10MC SWP)	211.25MC 215.75MC	13	"	L3	Adjust as described in step 8 for response similar to figure 6.
12.	"	"	207MC (10MC SWP)	205.25MC 209.75MC	12	"		Check for response curves within the limits shown in figures 6 and 7.
			201MC (10MC SWP)	199.25MC 203.75MC	11			
			195MC (10MC SWP)	193.25MC 197.75MC	10			
			189MC (10MC SWP)	187.25MC 191.75MC	9			
			183MC (10MC SWP)	181.25MC 185.75MC	8			
			177MC (10MC SWP)	175.25MC 179.75MC	7			
			85MC (10MC SWP)	83.25MC 87.75MC	6			
			79MC (10MC SWP)	77.25MC 81.75MC	5			
			69MC (10MC SWP)	67.25MC 71.75MC	4			
			63MC (10MC SWP)	61.25MC 65.75MC	3			
			57MC (10MC SWP)	55.25MC 59.75MC	2			

OSCILLATOR ALIGNMENT

Replace the oscillator and first video IF amp. tubes in their socket.
Remove the 220 ohm resistor between pins 5 and 6 of V3.
With the tuning shaft in maximum clockwise, the index mark on the dial and the 1 of 108MC should coincide straight up.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
13.	Direct	Across antenna terminals.	215.75MC (Unmod.)	13	DC Probe to Point ◇C. Common to chassis.	L11	Expand or compress coil turns for zero voltage reading on VTVM. A positive and negative will be obtained on either side of the correct setting.
14.	Direct	"	59.75MC	2	"	A18	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting. Repeat steps 13 and 14 until no further improvement can be made.

IF TRAP ADJUSTMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
15.	Direct	Across antenna terminals .	21.7MC	Any	DC Probe to Point ◇A. Low side to chassis.	A19	Adjust for MINIMUM deflection.

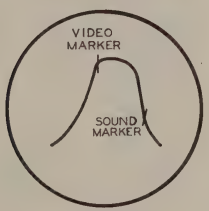


FIG.6

FIG.7

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6CB6	-8.5VDC	0V	0V	6.3VAC	245VDC	125VDC	0V		
V 2	6AK5	0V	3.8VDC	6.3VAC	0V	125VDC	125VDC	3.8VDC		
V 3	6AB4	110VDC	0V	6.3VAC	0V	110VDC	§-4.6VDC	0V		
V 4	6CB6	-8.6VDC	0V	0V	6.3VAC	245VDC	245VDC	0V		
V 5	6CB6	-8.8VDC	0V	0V	6.3VAC	245VDC	245VDC	0V		
V 6	6CB6	0V	1.2VDC	6.3VAC	0V	150VDC	115VDC	0V		
V 7	6AL5	0V	0V	6.3VAC	0V	0V	-0V	-8.4VDC		
V 8	6AU6	-1.2VDC	0V	6.3VAC	0V	135VDC	140VDC	0V		
V 9	12AU7	275VDC	-3.1VDC	1VDC	6.3VAC	6.3VAC	7.2VDC	0V	1.4VDC	0V
V 10	6BA6	-.2VDC	0V	0V	6.3VAC	210VDC	115VDC	1.2VDC		
V 11	6AU6	0V	0V	0V	6.3VAC	135VDC	135VDC	1.2VDC		
V 12	6AL5	.3VDC	-.3VDC	6.3VAC	0V	-.1VDC	0V	-.1VDC		
V 13	6SQ7	0V	-.4VDC	0V	0V	0V	80VDC	6.3VAC	0V	
V 14	6K6GT	0V	6.3VAC	235VDC	245VDC	0V	215VDC	0V	15VDC	
V 15	6SN7GT	-.4VDC	85VDC	0V	-28VDC	100VDC 0V	0V	0V	6.3VAC	
V 16	6SN7GT	0V	0V	2.5VDC	0V	150VDC	7.4VDC	6.3VAC	0V	
V 17	6S4	0V	20VDC 13VDC	0V	0V	6.3VAC	0V	0V	0V	290VDC
V 18	6SN7GT	-55VDC	235VDC	0V	-5.2VDC	38VDC	-32VDC	6.3VAC	0V	
V 19	6CD6G	0V	0V	11VDC	-.9VDC	-.6VDC	0V	6.3VAC	135VDC	TOP CAP •
V 20	6W4GT	0V	0V	440VDC	0V	380VDC	0V	440VDC	440VDC	
V 21	1B3GT	• DO NOT MEASURE								
V 22	5U4G	0V	400VDC	0V	390VAC	0V	390VAC	0V	400VDC	
V 23	12QP4A	0V	.4VDC	PIN 10 250VDC	PIN 11 115VDC	PIN 12 6.3VAC				

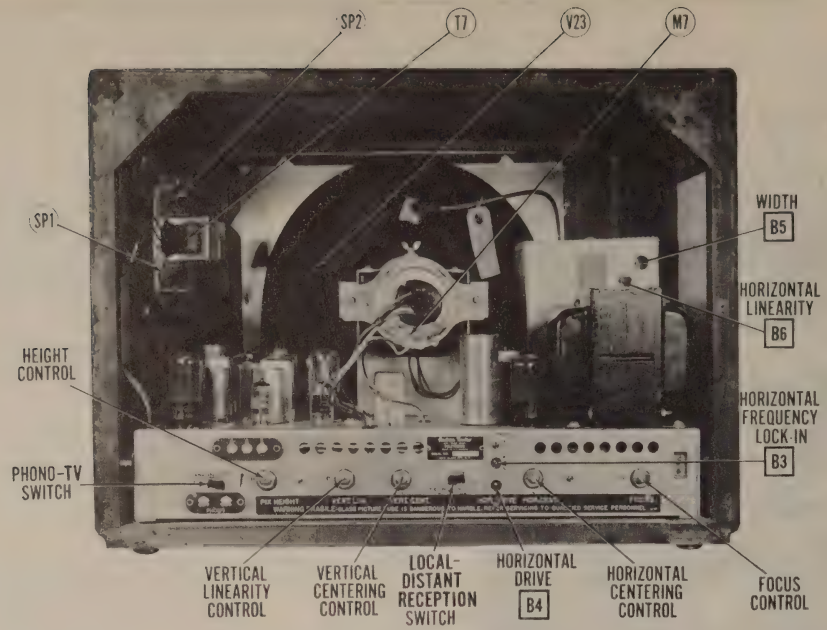
TV-FM SWITCH IN TV POSITION
TV-PHONO SWITCH IN TV POSITION
LOCAL-DISTANT SWITCH IN LOCAL POSITION
FOCUS CONTROL COUNTERCLOCKWISE
CENTERING CONTROLS SET AT MID-WAY POSITION
§ TAKEN WITH VACUUM TUBE VOLTMETER
• DO NOT MEASURE

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6CB6	†34KΩ	47Ω	0Ω	1.4Ω	†12KΩ	†25KΩ	0Ω		
V 2	6AK5	100KΩ	470Ω	.1Ω	0Ω	†20KΩ	†20KΩ	470Ω		
V 3	6AB4	†24KΩ	0Ω	.1Ω	0Ω	†24KΩ	12KΩ	0Ω		
V 4	6CB6	115KΩ	47Ω	0Ω	.1Ω	†13KΩ	†13KΩ	0Ω		
V 5	6CB6	105KΩ	47Ω	0Ω	.1Ω	†15KΩ	†15KΩ	0Ω		
V 6	6CB6	15KΩ	100Ω	.1Ω	0Ω	†15KΩ	†50KΩ	0Ω		
V 7	6AL5	0Ω	4.7KΩ	.1Ω	0Ω	.2Ω	0Ω	33KΩ		
V 8	6AU6	470KΩ	0Ω	.1Ω	0Ω	†23KΩ	†20KΩ	0Ω		
V 9	12AU7	†4.5KΩ	475KΩ	100Ω	.1Ω	.1Ω	†40KΩ	0Ω	330KΩ	0Ω
V 10	6BA6	215KΩ	0Ω	0Ω	.1Ω	†6KΩ	†40KΩ	82Ω		
V 11	6AU6	.3Ω	0Ω	0Ω	.1Ω	†20KΩ	†20KΩ	150Ω		
V 12	6AL5	15KΩ	16KΩ	.1Ω	0Ω	535KΩ	0Ω	535KΩ		
V 13	6SQ7	0Ω	4.7 Meg.	0Ω	0Ω	0Ω	†400KΩ	.1Ω	0Ω	
V 14	6K6GT	0Ω	.1Ω	†3.5KΩ	†3KΩ	680KΩ	†70KΩ	0Ω	680Ω	
V 15	6SN7GT	330KΩ	†30KΩ	0Ω	470KΩ	†475KΩ †1 Meg.	0Ω	0Ω	.1Ω	
V 16	6SN7GT	2.2 Meg.	2.2 Meg.	6.8KΩ	2.2 Meg.	†1KΩ	4.7KΩ	.1Ω	0Ω	
V 17	6S4	Inf.	3KΩ 1KΩ	1 Meg.	0Ω	.1Ω	1 Meg.	Inf.	Inf.	†7.4KΩ
V 18	6SN7GT	250KΩ	†68KΩ	0Ω	1 Meg.	†35KΩ	300KΩ	.1Ω	0Ω	
V 19	6CD6G	Inf.	0Ω	100Ω	1 Meg.	1 Meg.	Inf.	.1Ω	†50KΩ	TOP CAP †20KΩ
V 20	6W4GT	Inf.	Inf.	†20KΩ	Inf.	†120Ω	Inf.	†20KΩ	†20KΩ	
V 21	1B3GT	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	TOP CAP †20KΩ
V 22	5U4G	Inf.	25KΩ	Inf.	75Ω	Inf.	75Ω	Inf.	25KΩ	
V 23	12QP4A	0Ω	1.3 Meg.	PIN 10 †2.7KΩ	PIN 11 15KΩ	PIN 12 .1Ω				

TV-FM SWITCH IN TV POSITION
TV-PHONO SWITCH IN TV POSITION
LOCAL-DISTANT SWITCH IN LOCAL POSITION
FOCUS CONTROL COUNTERCLOCKWISE
CENTERING CONTROLS SET AT MID-POSITION
† MEASURED FROM PIN 2 OF V22

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1,000 ohms.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panels controls set at minimum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.



CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Pre-set the adjustments as follows.
Turn the horizontal hold control to mid-position of its range.
Set the horizontal lock trimmer (B3) 1/4 turn out from maximum clockwise.
Set the horizontal drive trimmer (B4) 1/4 turn out from maximum clockwise position.
Set the horizontal waveform adjustment (B2) three turns in from fully out (counter-clockwise).
Set the horizontal frequency adjustment (B1) so exactly one inch of screw products out of the can.
Turn the set on and tune in a TV station, preferably a test pattern.
Adjust B2 until the broad and narrow peaks of the waveform on the oscilloscope are within 15 percent of equal height.
Adjust B1 until the picture synchronizes horizontally. If the peaks of the waveformon the scope become more than 15% unequal, adjust B2 to keep them of approximately equal height.
Turn the horizontal hold control to maximum counter-clockwise. Momentarily interrupt the signal by tuning to another channel and back again. Slowly turn the hold control clockwise and note the least number of diagonal bars present just before the picture synchronizes. If more than 3 bars are present, turn B3 slightly clockwise. If less than 3 bars are present at the pull in point, turn B3 slightly counter-clockwise.
Repeat the pull-in check and retouch B3, if necessary.
Adjust B2 until the brand and narrow peaks of the waveform on the scope are of equal height as shown in figure 8. If necessary, keep the picture in synchronization with the horizontal hold control while adjusting B2.
The horizontal drive trimmer B4 should not be adjusted unless a white bar appears in the center of the picture, or the picture fails to fill the mask.
If a white bar is present in the picture, adjust B4 clockwise just enough to remove the white line.
If the picture width is insufficient, adjust B4 counter clockwise just enough to fill the mask.
If B4 changed it may be necessary to readjust B1.
Adjust the width slug (B5) until the picture fills the mask horizontally, if necessary retouch B4 for proper width.
Adjust the horizontal linearity slug (B6) until the picture is symmetrical from left to right.

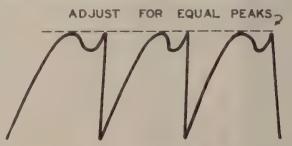
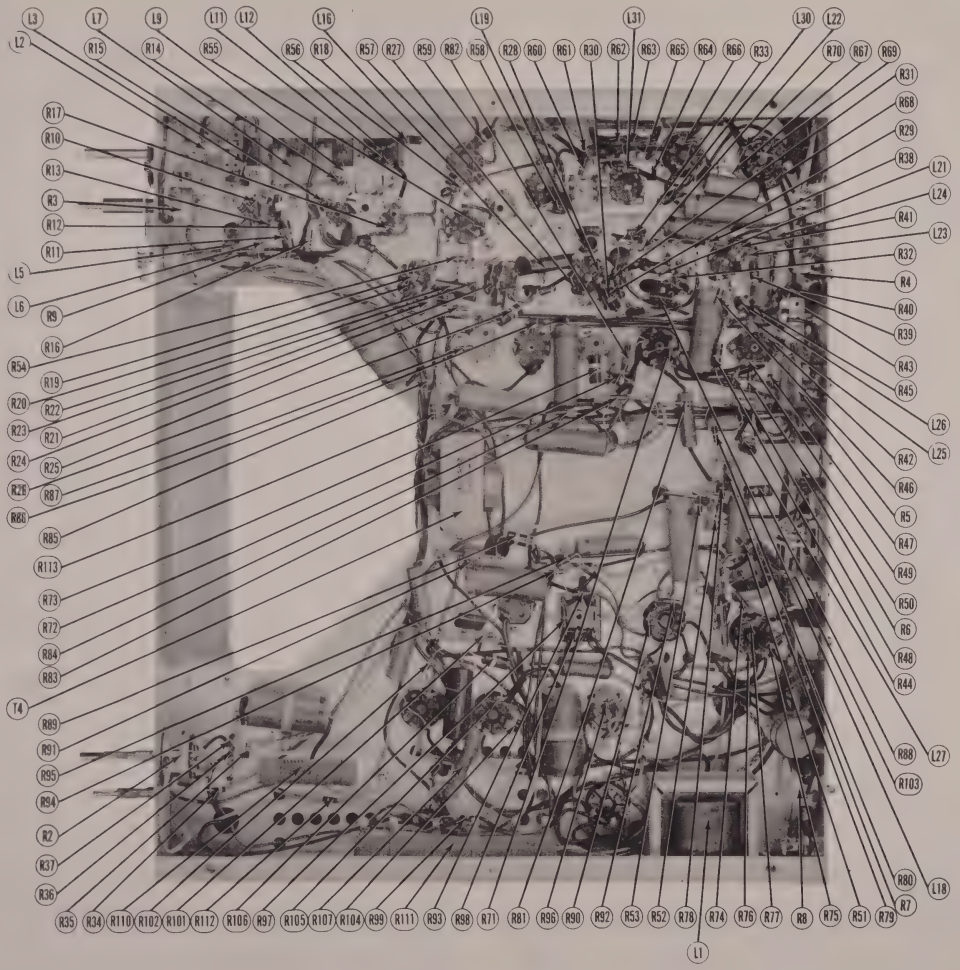


FIG. 8

DISASSEMBLY INSTRUCTIONS

1. Remove six push-on type control knobs.
2. Remove ten wood screws holding rear cover in place. Remove rear cover.
3. Disconnect built-in antenna.
4. Disconnect speaker leads at chassis.
5. Remove four 7/16" hex head screws holding chassis in cabinet. Remove chassis.
6. Remove four 5/16" hex nuts holding speaker in cabinet. Remove speaker.

NOTE: FOR PICTURE TUBE REMOVAL, IT IS NECESSARY TO REMOVE THE CHASSIS AS OUTLINED ABOVE.



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: ANDREA PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	RF Amp	6CB6	6CB6	6CK	
V2	Mixer	6AK5	6AK5	5CE	
V3	Oscillator	6AB4	6AB4	7BD	
V4	1st Video IF	6CB6	6CB6	6CK	
V5	2nd Video IF	6CB6	6CB6	6CK	
V6	3rd Video IF	6CB6	6CB6	6CK	
V7	Video Det.-AGC Sync. Amp.	6AL5	6AL5	6BT	
V8	1st Video Amp.	6AU6	6AU6	7BK	
V9	2nd Video Amp.-Dc Rest.-Sync. Amp.	12AU7	12AU7	9A	
V10	Sound IF Amp.	6BA6	6BA6	7BK	
V11	2nd Sound IF "	6AU6	6AU6	7BK	
V12	Ratio Det.	6AL5	6AL5	6BT	
V13	A F Amp.	6SQ7	6SQ7	8Q	
V14	Audio Output	6K8GT	6K8GT	7B	
V15	Sync Sep.-Vert Osc.	6SN7GT	6SN7GT	8BD	
V16	Sync Clipper Sync. Amp.	6SN7GT	6SN7GT	8BD	
V17	Vert. Output	6S4	6S4	9AC	
V18	Hor AFC-Hor. Osc	6SN7GT	6SN7GT	8BD	
V19	Hor. Output	6CD6G	6CD6G	5BT	
V20	Damper	6W4GT	6W4GT	4CG	
V21	HV Rect.	1B3GT	1B3GT	5C	
V22	LV Rect.	5U4G	5U4G	5T	
V23	Picture Tube	12QP4A	12QP4A	12D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP	RATING: VOLT	REPLACEMENT DATA: ANDREA PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CENTRALAB PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	500	HCE-1310	AF868K		UP4450		TVL-2830	▲ Filter
B	40	500							▲ Filter
C2A	20	450	HCE-1320	AF44J		UP2250		TVL-2755	▲ Filter
B	20	450							▲ Filter
C3A	20	450	HCE-1320	AF44J		UP2250		TVL-2755	▲ Filter
B	20	450							▲ Filter
C4	1000	25	HCE-1312-2	AF200A		UP1M- 25		TVL-1230	Filter
C5A	20	450	HCE-1319	AF43K		UP7245-1010		TVL-1420	▲ Decoupling
B	130	100						TVL-1420	▲ Vert. Output Cath.
C6A	4	450	HCE-1318	AF32J		UP74D45		TVL-2750	▲ Sync. Sep. Plate Dec.
B	4	450							▲ 1st V. Amp. Dec.
C7	25	25	HCE-1310	PRS250/4		BR215		TVA-1301	Stabilizing Cap.
C8	10	25	HCE-1329	PRS25/10		BR102A		TVA-1204	Output Cath. Bypass
C9	100		HCC-1031	S1100N750	TCN-100		N750L-100	29C16	Fixed Trimmer
C10	30		HCC-1034		TCN-30		N750K-30		Fixed Trimmer
C11	50		HCC-1029						Fixed Trimmer
C12	10		HCC-1023	S10N750	TCN-10		N750K-10	19C4	RF Coupling
C13	5000		HCC-1026	BPD-005	DD-502		81L-005	29C1	AGC Filter
C14	100		HCC-1033	S100N750	TCN-100		N750L-100	29C16	RF Amp. Screen
C15	5000		HCC-1026	BPD-005	DD-502		81L-005	29C1	RF Bypass
C16	100		HCC-1022-1	S100	D6-10I		GP1K-100	19C11	RF Coupling
C17	150		HCC-1027						Mixer Grid Filter
C18	1900		HCC-1032	BPD-001	DD-102		80L-001	19C1	Mixer Decoupling
C19	1900		HCC-1038	BPD-001	DD-102		80L-001	19C1	Mixer Cathode
C20	1000		HCC-1038	BPD-001	DD-102		80L-001	19C1	Mixer Cathode
C21	5000		HCC-1026	BPD-005	DD-502		81L-005	29C1	Mixer Filament
C22	1.4		HCC-1021						Osc. Coupling
C23	5.5		HCC-1025						Osc. Grid Cap.
C24	1.5-7		HCC-2116				TS2A-NPO-1.5-7		Variable Trimmer
C25	100		HCC-1022-1	S100	D6-10I	5WS7I	GP1K-100	19C11	IF Coupling
C26	1.0	100	HCT-1027-1	S84-1.0		GT7WI		27M-M1	Bias Filter
C27	1000		HCC-1032	BPD-001	DD-102	1WSD1	80L-001	19C1	1st V. IF Dec.
C28	100		HCC-1022-1	S100	D6-10I	5WS7I	GP1K-100	19C11	IF Coupling
C29	5000		HCC-1026	BPD-005	DD-502	1DSD5	81L-005	29C1	2nd V. IF Dec.
C30	1000		HCC-1032	BPD-001	DD-102	1WSD1	80L-001	19C1	2nd V. IF Dec.
C31	5000		HCC-1026	BPD-005	DD-502	1DSD5	81L-005	29C1	2nd V. IF Fil.
C32	100		HCC-1022-1	S100	D6-10I	5WS7I	GP1K-100	19C11	IF Coupling
C33	470		HCC-1035	S470	D6-47I	5WS7S	GP2K-470	19C15	3rd V. IF Dec.
C34	5000		HCC-1026	BPD-005	DD-502	1DSD5	81L-005	29C1	3rd V. IF Screen
C35	5000		HCC-1026	BPD-005	DD-502	1DSD5	81L-005	29C1	3rd V. IF Cath. Fixed Trimmer
C36	50			S150N750	TCN-50		N75UL-50		RF Coupling
C37	100		HCC-1022-1	S100	D6-10I	5WS7I	GP1K-100	19C11	IF Coupling
C38	4.7		HCC-1903	S14.7KPO	TCN-4.7	5WS7S	NP0K-4.7	MS-55	V. Diode Filter
C39	1.0	100	HCT-1027-1	S84-1.0		GT5WI		27M-M1	AGC Delay Filter
C40	5000		HCC-1026	BPD-005	DD-502	1DSD5	81L-005	29C1	Filament Bypass * V. DET-AGC Delay
C41	5000		HCC-1026	BPD-005	DD-502	1DSD5	81L-005	29C1	Fil.
C42	.1	300	HCT-1013	P288-1	DF-104	PTE4PI		27M-P1	Video Coupling
C43	.05	400	HCT-1003	P488-05	DF-503	PTE485		47M-S5	Video Coupling
C44	.05	400	HCT-1003	P488-05	DF-503	PTE485		47M-S5	Video Coupling
C45	.25	400	HCT-1015	P488-25		GT4P25		47M-P25	Video Coupling
C46	47		HCC-1926		TCZ-47		NP0M-47	29C16	Fixed Trimmer
C47	5000		HCC-1926	BPD-005	DD-502	1DSD5	81L-005	29C1	AVC Filter
C48	5000		HCC-1926	BPD-005	DD-502	1DSD5	81L-005	29C1	1st S. IF Plate Dec.
C49	5000		HCC-1926	BPD-005	DD-502	1DSD5	81L-005	29C1	1st S. IF Screen
C50	5000		HCC-1926	BPD-005	DD-502	1DSD5	81L-005	29C1	1st S. IF Fil.
C51	1500		HCC-1936	BPD-0015	DD-152	1WSD15	80L-0015	19C10	2nd S. IF Dec.
C52	5000		HCC-1926	BPD-005	DD-502	1DSD5	81L-005	29C1	2nd S. IF Cath.
C53	5000		HCC-1926	BPD-005	DD-502	1DSD5	81L-005	29C1	2nd S. IF Fil.
C54	330		HCC-1937	S1330	D6-33I	5WS7S	GP2K-330	19C14	Diode Load Cap.
C55	330		HCC-1937	S1330	D6-33I	5WS7S	GP2K-330	19C14	Diode Load Cap.
C56	330		HCC-1937	S1330	D6-33I	5WS7S	GP2K-330	19C14	Diode Load Cap.
C57	1500		HCC-1936	BPD-0015	DD-152	1WSD15	80L-0015	19C10	De-emphasis
C58	.01	400	HCT-1022	P488-01	DF-103	PTE481	82L-01	47M-S1	Audio Coupling

CAPACITORS (CONT.)

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: ANDREA PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CENTRALAB PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C59	.1	600	HCT-1002	P688-1	DF-104	PTE6P1		6TM-P1	AF Amp. Dec.
C60	.05	400	HCT-1003	P488-05	DF-503	PTE485		47M-S5	Audio Coupling
C61	.003	1200	HCC-1021	P1088-003		PTE3D3		MS-D3	Output Plate Byp.
C62	5000		HCC-1926	BPD-005	D6-502	1DSD5	81L-005	29C1	RF Bypass
C63	250	500	HCM-1624C	1468-00025	D6-251	5WS7Z5	GP2K-250	1FM-325	Sync. Coupling
C64	.01	600	HCT-1008	P688-01	D6-103	PTE6R1	82L-01	6TM-S1	Sync. Coupling
C65	500	500	HCM-1625A	1468-0005	D6-501	5WS7I	GP2K-500	1FM-35	Sync. Coupling
C66	5000	500	HCM-1602A	1467-005	DD-502	1DSD5	81L-005	1FM-21	Integrator Net.
C67	5000	500	HCM1602A	1467-005	DD-502	1DSD5	81L-005	1FM-31	Integrator Net. Integrator Net.
C68	5000	1000	HCM-1602AK	1464-HV-005					Vert. Osc. Grid
C70	.1	600	HCT-1002	P688-1	DF-104	PTE6P1		6TM-P1	Vert. Osc. Grid
C71	.08	600	HCT-1029						Vert. Discharge
C72	.1	600	HCT-1002	P688-1	DF-104	PTE6P1		6TM-P1	Vert. Sweep Coupling
C73	250	500	HCM-1624C	1468-00025	D6-251	5WS7Z5	GP2K-250	1FM-325	Hor. Sync. Coupling Hor. Feedback
C74	5	2000	HCM-1626D2K						Hor. Sync. Coupling
C75	2000	500	HCM-1606A	1467-002	D6-202	1WSD2	GP3M-002	1FM-22	AFC Filter
C76	.03	600	HCT-1030	P688-03	DF-303	PTE683		6TM-S2	AFC Filter
C77	.25	400	HCT-1015	P488-25		GT4P25		47M-P25	AFC Filter
C78	.05	400	HCT-1003	P488-05	DF-503	PTE485		47M-S5	Hor. AFC Plate
C79	250	500	HCM-1624C	1469-00025	D6-251	5R5T25	GP2K-250	MS-325	Hor. Osc. Grid
C80	.01	600	HCT-1008	P688-01		PTE6R1		6TM-S1	Fixed Trimmer
C81	1000	500	HCM-1606A	1467-001	D6-102	1WSD1	GP2L-101	1FM-21	Hor. Discharge
C82	500	500	HCM-1623A	1468-0003	D6-301	5WS7S	GP2K-300	MS-35	Hor. Sweep Coupling
C83	.1	600	HCT-1002	P688-1	DF-104	PTE6P1		6TM-P1	Hor. Output Screen
C84	5000	1600	HCC-1926	BPD-005	DD-502	1DSD5	81L-005	29C1	Hor. Output Screen
C85	1.0	100	HCT-1027-1	S84-1.0		GT2WI		27M-M1	Hor. Output Cath.
C86	.03	400	HCT-1030	P488-03		PTE683		6TM-S3	Damper Filter
C87	.05	400	HCT-1003	P488-05		PTE485		6TM-S5	Damper Filter
C88	1.0	100	HCT-1027-1	S84-1.0		GT2WI		27M-M1	Hor. Sweep Coupling
C89	.25	400	HCT-1015	P488-25		GT4P25		47M-P25	Pic. Tube Cath.
C90	500	10000	HCH-2701-1	HV10B	TVI-501				HV Filter
C91	.01	400	HCT-1003	P488-05	DF-503	PTE485		47M-S5	Line Filter *
C92	.05	400	HCT-1003	P488-05	DF-503	PTE485		47M-S5	Line Filter *

* Not used in all models.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ANDREA PART No.	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: CLAROSTAT PART No.	REPLACEMENT DATA: CENTRALAB PART No.	INSTALLATION NOTES
R1A	50KΩ	½		Concentrikit			Horiz. hold control-front
B	2 Meg.	½	GRV-831	BU-123 * BU-139 *	RTV-75		Vert. hold control-rear
C	Shaft End			E-187 *			Attach per instr. in "Concentrikit"
R2A	20KΩ	4	GRV-832		RTV-229		Brightness control-front-wire wound
B	10KΩ	4					Contrast control-rear
R3A	500KΩ		GRV-830	QI3-133	AG-80-Z	B-60-S	Volume control
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Attach to R3A per instructions
C	Switch		Not Req.	76-1	SWB	Not Req.	Attach to R3A per instructions
R4A	2 Meg.	½	GRV-812-1	QII-139	AG-83-S	AN-75	Height control
B	Shaft		Not Req.	Not Req.	FX2-1/4	AK-1	Attach to R4A per instructions
R5	2000Ω	2	GRV-824	WK-3000	43-3000	VK-131	Vert. linearity control-wire wound
R6	20Ω	2	GRV810-1	W-20 x 10	RTV-3	SVT-901	Vert. centering control-wire wound tapped at 10Ω
R7	40Ω	2	GRV-823	W-40	43-40	V-114	Horiz. centering control
R8	3000Ω	4	GRV-829		RTV-61	SVP-968	Focus control-wire wound

* Additional parts to be used with "Concentrikit".

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ANDREA PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES ALL RESISTORS ARE ± 10% UNLESS OTHERWISE STATED.
R9	1000Ω 5%	½	GRC-245	BTS-1000-5%	AGC Network
R10	47Ω	½	GRC-211		RF Amp. Cathode
R11	47KΩ 5%	½	GRC-207		RF Amp. Screen
R12	10KΩ	2	GRC-267		RF Amp. Plate
R13	47KΩ	½	GRC-207		Voltage Divider
R14	100KΩ 20%	½	GRC-225		Mixer Grid
R15	470Ω	1	GRC-213	BTS-470	Mixer Cathode
R16	18KΩ 5%	½	GRC-308		Mixer Decoupling
R17	12KΩ	½	GRC-272		Osc. Grid
R18	22KΩ	½	GRC-300		Osc. Plate
R19	15KΩ 5%	½	GRC-233		1st Video IF Amp. Grid
R20	47Ω	½	GRC-211		1st Video IF Amp. Cathode
R21	10KΩ	2	GRC-267		1st Video IF Amp. Decoupling
R22	5.1Ω	½	GRC-292		Parasitic Suppressor-Wire Wound
R23	4700Ω 5%	½	GRC-273	BTS-4700-5%	2nd Video IF Amp. Grid
R24	47Ω	½	GRC-211		2nd Video IF Amp. Cathode
R25	2200Ω	1	GRC-219	BTS-2200	2nd Video IF Amp. Decoupling
R26	10KΩ	½	GRC-267		3rd Video IF Amp. Decoupling
R27	15KΩ	½	GRC-223		3rd Video IF Amp. Grid
R28	100Ω	½	GRC-216	BTS-100	3rd Video IF Amp. Cathode
R29	47KΩ	½	GRC-207		3rd Video IF Amp. Screen
R30	10KΩ	2	GRC-267		3rd Video IF Amp. Plate
R31	1000Ω 5%	½	GRC-245	BTS-1000-5%	3rd Video IF Amp. Decoupling
R32	33KΩ	½	GRC-203	BTS-33K	Video Peaking Coil Shunt
R33	4700Ω 5%	½	GRC-273	BTS-4700-5%	Video Det. Diode Load
R34	820KΩ	½	GRC-246	BTS-820K	AGC Network
R35	470KΩ	½	GRC-228	BTS-470K	AGC Network
R36	33KΩ	½	GRC-203	BTS-33K	AGC Network
R37	100KΩ 20%	½	GRC-225	BTS-100K	AGC Network
R38	470KΩ	½	GRC-228	BTS-470K	Video Amp. Grid
R39	3900Ω 5%	½	GRC-262	BTA-3900-5%	Video Amp. Cathode
R40	680Ω	2	GRC-257	BTS-680Ω	Video Amp. Decoupling
R41	18KΩ 5%	½	GRC-261	BTS-18K-5%	Video Peaking Coil Shunt
R42	470KΩ	½	GRC-228	BTS-470K	Vert. Output Grid
R43	100Ω	½	GRC-216	BTS-100	Video Output Cathode
R44	330Ω	½	GRC-254	BTA-330Ω	Video Output Plate
R45	10KΩ	½	GRC-304	BTS-10K	Video Peaking Coil Shunt

RESISTORS (CONT.)

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ANDREA PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
R46	470Ω	½	GRC-205		Isolation
R47	820KΩ	½	GRC-246	BTS-820K	Voltage Divider
R48	330KΩ	½	GRC-301	BTS-330K	DC Restorer Load
R49	47KΩ	½	GRC-207	BTS-47K	DC Restorer Load
R50	1 Meg.	½	GRC-274	BTS-1 Meg.	Picture Tube Grid
R51	270KΩ	½	GRC-275	BTS-270K	Voltage Divider
R52	3900Ω 5%	½	GRC-303	BTS-3900-5%	Voltage Divider
R53	2200Ω	½	GRC-219	BTS-2200	Voltage Divider
R54	100KΩ 20%	½	GRC-225	BTS-100K	AVC Network
R55	82Ω	½	GRC-215	BTS-82	1st Sound IF Amp. Cathode
R56	33KΩ	½	GRC-306	BTS-39K	1st Sound IF Amp. Screen
R57	3300Ω	1	GRC-254	BTA-3300	1st Sound IF Amp. Plate Decoupling
R58	150Ω	½	GRC-202	BTS-150	2nd Sound IF Amp. Cathode
R59	18KΩ	2	GRC-237	BTS-15K	2nd Sound IF Amp. Decoupling
R60	22Ω	½	GRC-307	BW-[-22	Balancing
R61	33KΩ	½	GRC-203	BTS-33K	De-emphasis
R62	15KΩ 5%	½	GRC-223	BTS-15K-5%	Ratio Det. Diode Load
R63	15KΩ 5%	½	GRC-223	BTS-15K-5%	Ratio Det. Diode Load
R64	100KΩ 5%	½	GRC-245	BTS-1000-5%	Ratio Det. Diode Load
R65	100KΩ 20%	½	GRC-225	BTS-100K	AVC Network
R66	4.7 Meg. 20%	½	GRC-242	BTS-4.7 Meg.	A F Amp. Grid
R67	330KΩ	½	GRC-301	BTS-330K	A F Amp. Plate
R68	68KΩ	½	GRC-204	BTS-68K	A F Amp. Plate Decoupling
R69	680KΩ	½	GRC-302	BTS-680K	Output Grid
R70	680Ω	½	GRC-297	BTS-680	Output Cathode
R71	330KΩ	½	GRC-301	BTS-330K	Sync. Sep. Grid
R72	6800Ω	2	GRC-257	BTS-6800	Sync. Sep. Plate
R73	22KΩ	2	GRC-238	BTB-22K	Sync. Sep. Plate Decoupling
R74	2.2 Meg. 20%	½	GRC-284	BTS-2.2 Meg.	Sync. Amp. Grid
R75	470Ω	1	GRC-284	BTA-4700	Sync. Amp. Cathode
R76	680Ω	½	GRC-221	BTS-6800	Sync. Clipper Cathode
R77	470KΩ	½	GRC-228	BTS-470K	Voltage Divider
R78	22KΩ	½	GRC-208	BTS-22K	Voltage Divider
R79	15KΩ 5%	½	GRC-223	BTS-15K-5%	Integrator
R80	6800Ω	½	GRC-231	BTS-6800	Integrator
R81	6800Ω	½	GRC-231	BTS-6800	Integrator
R82	470KΩ	½	GRC-228	BTS-470K	Vert. Osc. Grid
R83	1 Meg. 20%	½	GRC-274	BTS-1 Meg.	Vert. Hold Control Shunt
R84	470KΩ	½	GRC-228	BTS-470K	Vert. Osc. Plate
R85	3300Ω	½	GRC-220	BTS-3300	Vert. Peaking
R86	1 Meg.	½	GRC-274	BTS-1 Meg.	Vert. Output Grid
R87	1000Ω 5%	½	GRC-245	BTS-1000-5%	Vert. Output Cathode
R88	33Ω 5%	2	GRC-299	BW-2-33	Centering Network
R89	680Ω	2	GRC-257	BTB-6800	Vert. Output Plate
R90	3.3 Meg. 20%	½	GRC-206	BTS-3.3 Meg.	Voltage Divider
R91	10KΩ	½	GRC-304	BTS-10K	Horiz. AFC Filter
R92	820KΩ	½	GRC-246	BTS-820K	Horiz. AFC Grid
R93	150KΩ	½	GRC-243	BTS-150K	Horiz. AFC Cathode
R94	150KΩ	½	GRC-243	BTS-150K	Horiz. AFC Cathode
R95	100KΩ 20%	½	GRC-225	BTS-100K	Horiz. Osc. Grid
R96	68KΩ	½	GRC-204	BTS-68K	Horiz. Osc. Grid
R97	8200Ω	½	GRC-285	BTS-8200	Horiz. Osc. Transformer Shunt
R98	220KΩ	½	GRC-235	BTS-22K	Horiz. Osc. Transformer Shunt
R99	150KΩ	½	GRC-243	BTS-150K	Horiz. AFC Plate
R100	22KΩ	½	GRC-201	BTS-22K	Voltage Divider
R101	470KΩ	½	GRC-228	BTS-470K	Horiz. Feedback Network
R102	560KΩ	½	GRC-305	BTS-560K	Horiz. Feedback
R103	33KΩ	½	GRC-203	BTS-33K	Horiz. Peaking
R104	4700Ω	½	GRC-205		Parasitic Suppressor
R105	1 Meg.	½	GRC-274	BTS-1 Meg.	Horiz. Output Grid
R106	1000Ω	2	GRC-235	BW-2-100	Horiz. Output Cathode
R107	30KΩ	10	GRW-530		Horiz. Output Screen-Wire Wound
R108	5.1Ω	½	GRC-292		HV Rectifier Filament
R109	220KΩ	½	GRC-270		HV Filter
R110A	3000Ω	25	GRW-531		Voltage Divider-Wire Wound
B	16KΩ				Voltage Divider-Wire Wound
R111A	700Ω	45	GRW-529		Focus Coil Shunt-Wire Wound
B	1700Ω				Voltage Divider-Wire Wound
C	1000Ω				Voltage Divider-Wire Wound
D	1600Ω				Voltage Divider-Wire Wound
E	100Ω				Voltage Divider-Wire Wound
R112	68000Ω	½	GRC-221	BTS-6800	Voltage Divider
R113	2700Ω		GRC-275	BTS-2700	Vert. Output Transformer Shunt-See Note

Note. Not used in all models.

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: ANDREA PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.
T1	117VAC @ 2.2A	820VCT @ .240ADC	5VAC @ 3A	6.3VAC @ 8.5A SEC. 4 6.3VAC @ 1.2A	ST-3023			

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING: DC RESISTANCE PRI.	RATING: DC RESISTANCE SEC.	REPLACEMENT DATA: ANDREA PART No.	REPLACEMENT DATA: 'STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.	NOTES
T2	175Ω	950Ω	ST-3029	A-8122	A-4000 ①	TBO-2	Vert. Osc. Trans.
T3	325Ω Tap ⓐ 100Ω	1Ω Tap ⓐ .9Ω	ST-3018-1	A-8128	HVO-3	TPB-1	Horiz. Output Trans.
T4	550Ω	1Ω	ST-3030	A-8112	A-3036	TBO-5 ①	Vert. Output Trans.
T5A	14Ω			DY-1	MD-1		Horiz. Deflection Coil
B	82Ω						Vert. Deflection Coil
T6	1.4KΩ		ST-3032				Focus Coil

① Drill new mounting hole.

PARTS LIST CONTINUED ON PAGE 15

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		ANDREA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T7	8.1KΩ	240Ω	540Ω	.5Ω		A-8114	A-2931	RO-13	

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	ANDREA PART No.	VIKING PART No.	QUAM PART No.	
SP1	PM	4.1Ω	SL-4009	52524	52A1	
	CONE DIA.	V. C. DIA.				
SP2	5 1/8"	9/16"				

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE @ CURRENT 1000 ~/	ANDREA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
L1	240ADC	110Ω	3.7 Henries	ST-3031	C-2328 ①	C-2996	TR-3300①	① Drill new mounting hole.

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA			NOTES
		PRI.	SEC.	ANDREA PART No.	RHEISSNER PART No.	IRC PART No.	
L2	Sound IF Trap	0Ω		SA-337			
L3	Ant. End Inductor	0Ω		*			
L4	Ant. Coil	0Ω		*			
L5	RF Choke	8.2Ω		SA-341		CL-1	10 microhenries
L6	Fil. Choke	2Ω				CL-1	3.3 microhenries
L7	RF End Inductor	0Ω		SA-330			
L8	RF Coil	0Ω		*			
L9	Mixer Grid End Inductor	0Ω					
L10	Mixer Grid	0Ω		*			
L11	Osc. End Inductor	0Ω		SA-318-1			
L12	Osc. Shunt	.2Ω		SA-316			
L13	Osc. Coil	0Ω		*			
L14	1st Video IF	.3Ω		SA-331			
L15	2nd Video IF -Sound Take Off	.2Ω	.1Ω	SA-332			
L16	Fil. Choke	0Ω		SA-280			
L17	3rd Video IF	.2Ω		SA-333			
L18	Fil. Choke	0Ω		SA-280			
L19	Cath. Trap	0Ω	0Ω	SA-287			
L20	4th Video IF	.2Ω		SA-334			
L21	Peaking	8Ω		SA-284			Yellow dot
L22	Peaking	7Ω		SA-285			Green dot
L23	Peaking	8Ω		SA-284			Yellow dot
L24	Peaking	8Ω		SA-284			Yellow dot
L25	Peaking	8Ω		SA-284			Yellow dot
L26	Peaking	6.2Ω		SA-286			Blue dot
L27	4.5MC Trap	2.6Ω		SA-328			
L28	Sound IF	.3Ω	.3Ω	SA-329			
L29	Ratio Det. Trans.	.3Ω	.2Ω	SA-327			
L30	Fil. Choke	0Ω		SA-280			
L31	RF Choke	.2Ω		SA-278			
L32	Horiz. Osc. Trans.	75Ω	46Ω	SA-335			
L33	Horiz. Lin.	32Ω		SA-315-1			
L34	Width Coil	1.2Ω		SA-336			

* Part of RF tuner

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA				REMARKS
			ANDREA PART No.		LITTELFUSE PART No.		
			FUSE	HOLDER	FUSE	HOLDER	
M2	3AG	.25A Ⓢ 250V	FM-5163		318.250		

MISCELLANEOUS

ITEM No.	PART NAME	ANDREA PART No.	NOTES
M1	RF Tuner		
M3	Switch	FM-5212	TV-Phono
M4	Switch	FM-5212	Local-Distant Reception
M5	Switch	FM-5206	TV-FM
M6	Switch	FM-5196	High Band, Low Band
M7	Ion Trap	FM-5137	
B3, B4	Trimmer	HCV-2120	Dual, Horiz. Lock 15-170MMF, Horiz. Drive 200-530MMF

PHOTOFACT* Folder

GENERAL ELECTRIC MODELS

14C102, 103; 14T2, 3; 16C103, 110, 111, 113, 115, 116, 117; 16T1, 2, 3, 4; 17C101, 102

IMPORTANT FILING NOTICE

The contents for this envelope will be found among the last folders in this complete set of folders . . . *unless* it has been purchased as part of a *complete* volume of PHOTOFACTS assembled in a DeLuxe Binder.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.

MODEL 16C103

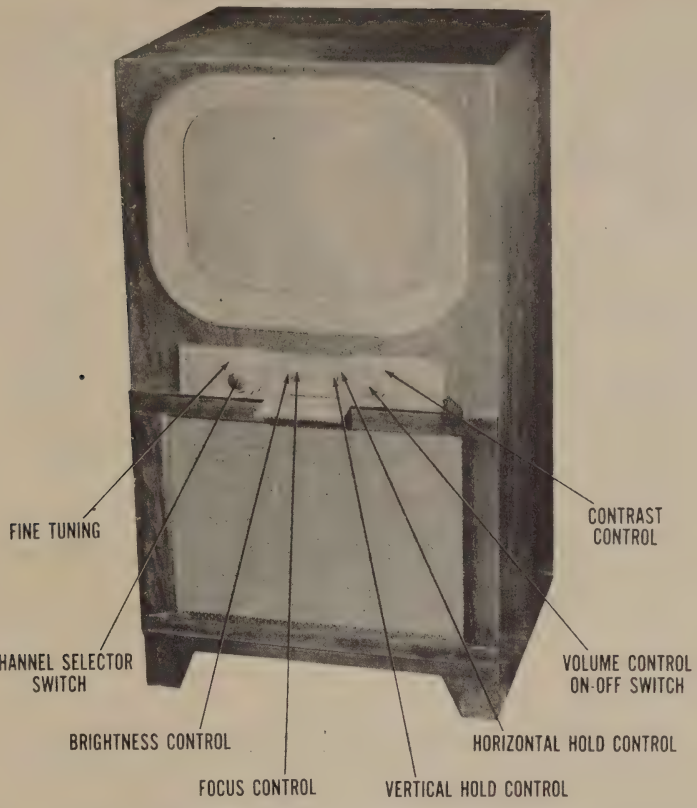
GENERAL ELECTRIC MODELS
14C102, 103; 14T2, 3; 16C103, 110, 111, 113, 115, 116, 117; 16T1, 2, 3, 4; 17C101, 102

HOWARD W. SAMS & CO., INC. • Indianapolis, Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1951 by Howard W. Sams & Co., Inc., Indianapolis, Indiana, U.S.A. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc."
Printed in U. S. of America

Date 1/51 Set No. 123—Folder No. 4

GENERAL ELECTRIC MODELS 14C102, 103; 14T2, 3; 16C103, 110, 111, 113, 115, 116, 117; 16T1, 2, 3, 4; 17C101, 102



G.E. Model 16C103

TRADE NAME	G.E. Models 14C102, 14C103, 14T2, 14T3, 16C103, 16C110, 16C111, 16C113, 16C115, 16C116, 16C117, 16T1, 16T2, 16T3, 16T4, 17C101, 17C102
MANUFACTURER	General Electric Co., Electronics Dept., Electronics Park, Syracuse, New York
TYPE SET	Television Receiver
TUBES	Twenty-One
POWER SUPPLY	110-120 Volts AC-60 Cycle
RATING	1.5 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13

INDEX

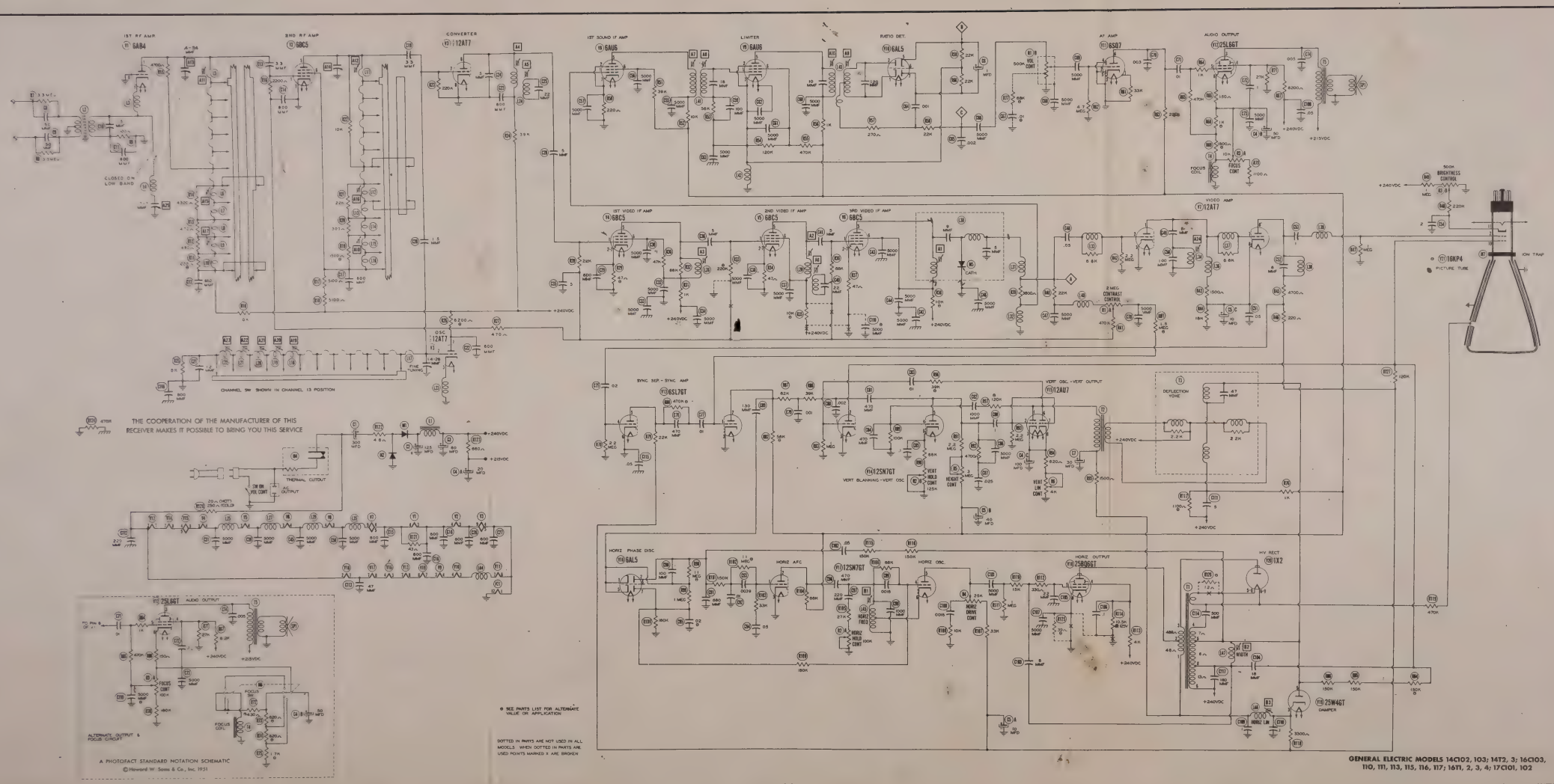
Alignment Instructions 6, 7
Disassembly Instructions 18
Drive Cord Stringing 18
Horizontal Sweep Circuit Adjustments 11
Parts List And Description 13, 14, 15, 16
Photographs
Cabinet - Rear View 11
Capacitor And Alignment Identification..... 4, 9
Photographs (Continued)
Chassis - Top View..... 3
RF Tuner..... 10
Resistor And Inductor Identifications 12, 17
Schematic 2
Tube Placement Chart 5
Voltage And Resistance Measurements..... 8

HOWARD W. SAMS & CO., INC. • Indianapolis 1, Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed."
"Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1951 by Howard W. Sams & Co., Inc., Indianapolis, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

DATE 2-51 SET 123 FOLDER 4

GENERAL ELECTRIC MODELS 14C102, 103; 14T2, 3; 16C103, 110, 111, 113, 115, 116, 117; 16T1, 2, 3, 4; 17C101, 102



GENERAL ELECTRIC MODELS 14C102, 103; 14T2, 3; 16C103, 110, 111, 113, 115, 116, 117; 16T1, 2, 3, 4; 17C101, 102

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AB4	145VDC	0V	18VAC	20VAC	145VDC	0V	1VDC		
V 2	6BC5	-.6VDC	0V	12VAC	18VAC	135VDC	135VDC	0V		
V 3	12AT7	185VDC	§-3.6VDC	0V	6.3VAC	6.3VAC	110VDC	-1.7VDC	0V	12VAC
V 4	6BC5	-1.5VDC	.3VDC	55VAC	49VAC	225VDC	160VDC	.3VDC		
V 5	6BC5	-.6VDC	.4VDC	48VAC	42VAC	140VDC	140VDC	.4VDC		
V 6	6BC5	-.6VDC	.4VDC	41VAC	35VAC	150VDC	150VDC	.4VDC		
V 7	12AT7	75VDC	-.7VDC	0V	20VAC	20VAC	310VDC	75VDC	75VDC	26VAC
V 8	6AU6	0V	1.8VDC	27VAC	34VAC	165VDC	130VDC	1.8VDC		
V 9	6AU6	-.6VDC	0V	26VAC	20VAC	215VDC	25VDC	0V		
V 10	6AL5	0V	0V	13VAC	20VAC	.7VDC	0V	-.7VDC		
V 11	6SQ7	-.1VDC	-.4VDC	0V	0V	0V	90VDC	12VAC	6.3VAC	
V 12	25L6GT	0V	100VAC	205VDC	165VDC	15VDC 30VDC	35VDC 60VDC	75VAC	70VDC 40VDC	
V 13	6SL7GT	-1VDC	160VDC	0V	-.8VDC	250VDC	0V	57VAC	50VAC	
V 14	12SN7GT	-50VDC	310VDC	0V	-1VDC	40VDC 15VDC	6.4VDC 3.7VDC	75VAC	62VAC	
V 15	12AU7	360VDC	0V	25VDC 15VDC	62VAC	62VAC	360VDC	0V	25VDC 15VDC	55VAC
V 16	6AL5	1.5VDC	-1.5VDC	57VAC	63VAC	1.5VDC	0V	-11VDC		
V 17	12SN7GT	-.6VDC	85VDC	0V	-25VDC	235VDC 175VDC	.3VDC	75VAC	63VAC	
V 18	25BQ6GT	-50VDC	100VAC	0V	105VDC	-50VDC	0V	75VAC	0V	TOP CAP *
V 19	25W4GT	0V	0V	380VDC	225VDC	240VDC	240VDC	26VAC	50VAC	
V 20	1X2	* DO NOT MEASURE								
V 21	16KP4	6.3VAC	.1VDC	PIN 10 310VDC	PIN 55VDC	11 0V	PIN 12 0V			

§ TAKEN WITH VACUUM TUBE VOLTMETER
* DO NOT MEASURE

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AB4	†10KΩ	Inf.	16Ω	19Ω	†10KΩ	0Ω	100Ω		
V 2	6BC5	2.5 Meg.	0Ω	12Ω	16Ω	†10KΩ	†10KΩ	0Ω		
V 3	12AT7	†6.2KΩ	10KΩ	.2Ω	8Ω	8Ω	†39KΩ	220KΩ	0Ω	12Ω
V 4	6BC5	2.5 Meg.	47Ω	30Ω	29Ω	†1KΩ	†48KΩ	47Ω		
V 5	6BC5	2.7 Meg.	47Ω	29Ω	27Ω	†10KΩ	†10KΩ	47Ω		
V 6	6BC5	2.5 Meg.	47Ω	27Ω	25Ω	†10KΩ	†10KΩ	47Ω		
V 7	12AT7	20KΩ	2.2 Meg.	0Ω	19Ω	19Ω	#8.2KΩ	20KΩ	18KΩ	22Ω
V 8	6AU6	7.7Ω	220Ω	25Ω	22Ω	†11KΩ	†40KΩ	220Ω		
V 9	6AU6	56KΩ	1.8Ω	23Ω	19Ω	†2.4KΩ	†120KΩ	1.8Ω		
V 10	6AL5	Inf.	Inf.	14Ω	19Ω	22KΩ	Inf.	22KΩ		
V 11	6SQ7	33KΩ	4.7 Meg.	0Ω	0Ω	0Ω	†220KΩ	13Ω	8Ω	
V 12	25L6GT	Inf.	35Ω	†950Ω	†7.5KΩ	470KΩ	1KΩ	34Ω	1.1KΩ	
V 13	6SL7GT	3.5 Meg.	†60KΩ	0Ω	2.2 Meg.	#25KΩ	0Ω	33Ω	30Ω	
V 14	12SN7GT	1 Meg.	#125KΩ	0Ω	100KΩ	†2.2Meg. †5.2Meg.	200KΩ 70KΩ	34Ω	32Ω	
V 15	12AU7	#2.7KΩ	2.2 Meg.	4.8KΩ 820Ω	32Ω	32Ω	#2.7KΩ	2.2 Meg.	4.8KΩ 820Ω	30Ω
V 16	6AL5	1.1 Meg.	2.2 Meg.	33Ω	36Ω	1.1 Meg.	Inf.	120KΩ		
V 17	12SN7GT	3.2 Meg.	†70KΩ	0Ω	68KΩ	#35KΩ #60KΩ	48Ω	40Ω	36Ω	
V 18	25BQ6GT	1 Meg.	35Ω	Inf.	†4KΩ	1 Meg.	Inf.	40Ω	0Ω	TOP CAP #46Ω
V 19	25W4GT	Inf.	Inf.	80KΩ	†150KΩ	†85Ω	†85Ω	23Ω	30Ω	
V 20	1X2	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	TOP CAP #535Ω
V 21	16KP4	8Ω	1 Meg.	PIN 10 #125KΩ	PIN 600KΩ	11 220KΩ	PIN 12 0Ω			

† MEASURED FROM OUTPUT OF M1
# MEASURED FROM PIN 3 OF V19

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1,000 ohms.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panels controls set at minimum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.

ALIGNMENT INSTRUCTIONS (CONT.)

OSCILLATOR ALIGNMENT

Leave the bias adjusted as during video IF and RF alignment.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
16.	Two 120Ω carbon res.	Across antenna terminals with 120Ω in each lead.	213MC (15MC SWP)	211.25MC	13	Vert. Amp. to Point (A) Low side to B- .	L17	Expand or compress coil turns to place video marker at 50% response as shown in figure 12.
17.	"	"	207MC (15MC SWP)	205.25MC	12	"		Check all high band channels to see if the video marker occurs at 50%. If necessary make compromise adjustment of L17 so video marker can be properly placed well within the range of the fine tuning control.
			201MC (15MC SWP)	199.25MC	11			
			195MC (15MC SWP)	193.25MC	10			
			189MC (15MC SWP)	187.25MC	9			
			183MC (15MC SWP)	181.25MC	8			
			177MC (15MC SWP)	177.25MC	7			
18.	"	"	85MC (15MC SWP)	83.25MC	6	"	A19	Adjust to place video marker at 50% on response curve as shown in figure 12.
			79MC (15MC SWP)	77.25MC	5		A20	
			69MC (15MC SWP)	67.25MC	4		A21	
			63MC (15MC SWP)	61.25MC	3		A22	
			57MC (15MC SWP)	55.25MC	2		A23	

4.5MC TRAP ADJUSTMENT

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
19.	.01MFD	High side to pin 2 (Grid) of 12AT7 (V7). Low side to B- .	Not used	4.5MC (400∿ Mod.)	Any channel not used locally	Vert. Amp. thru detector probe to pin 6 of V7. Low side to B- .	A24	Adjust for MINIMUM 400∿ indication on scope.

HIGH CHANNEL TRAP ADJUSTMENT

The trap adjustment (A25) may be used to eliminate any one of the following high channel interference on the corrosponding lower channel shown.
Channel 8 on channel 4
Channel 11 on channel 5
Channel 13 on channel 6
If none of the above combinations of channels exist in the locality where the receiver is to be operated, A23 need not be adjusted.

FIG.1

FIG. 2

FIG.3

FIG.4

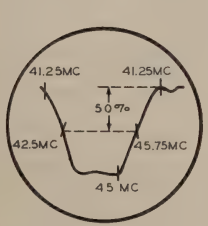


FIG.5

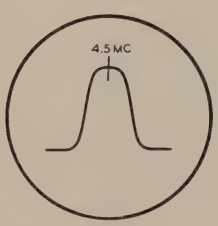


FIG. 6

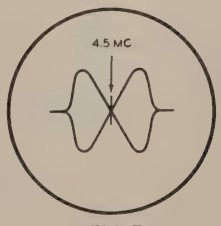


FIG.7

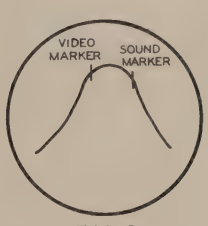


FIG.8

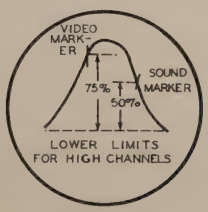


FIG.9

FIG.10

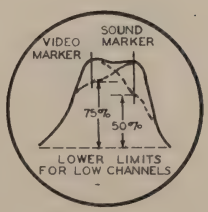


FIG.11

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use an isolation transformer to protect the test equipment.

The end of the high voltage lead should be securely taped and dressed away from the chassis. Do not remove the horizontal oscillator tube to eliminate the high voltage.

To operated the set without the picture tube, short pins 1 and 12 of the picture tube socket.

The low sides of the test equipment must be connected to B- and not the receiver's chassis. A convenient place to connect the ground leads is the shield portions between the wafer sections on the bottom of the RF tuner.

VIDEO IF ALIGNMENT

Connect the negative lead of a 4.5 volt battery to the junction of R81, C78 and the contrast control. Connect the DC probe of a VTVM to pin 1 of V2 common to B- . Adjust the contrast control until VTVM reads -2.7 volts.

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

Turn the channel selector switch to a channel which causes no spurious responses. To check for spurious interference, turn the fine tuning control and note if any part of the reponse curve changes, if it does switch to another channel.

Detune traps A5 and A6 by turning cores fully counter-clockwise.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	.01MFD	High side to pin 1 (Grid) of 6BC5 (V6). Low side to B-.	45MC (10MC SWP)	44.5MC	See note above	Vert. Amp. thru 10KΩ to Point (A). Low side to B- on V7 socket.	A1	Short L28 (A2). Adjust for response curve similar to figure 1. Remove L28 short.
2.	.01MFD	High side to pin 1 (Grid) of 6BC5 (V5). Low side to B-.	"	45.75MC	"	"	A2	Short L26 (A3). Adjust for reponse curve similar to figure 2. Remove L26 short.
3.	.01MFD	High side to pin 1 (Grid) of 6BC5 (V4). Low side to B-.	"	42.5MC 45.75MC	"	"	A3	Short L24 (A4). Adjust for response curve similar to figure 3. Remove L24 short.
4.	.01MFD	High side to the junction of L12 and the high channel RF coils. Low side to B-.	"	44.2MC	"	"	A4	Adjust for response curve similar to figure 4.
5.	.01MFD	"	"	47.25MC	"	"	A5, A6	Adjust for minimum marker indication at the 47.25MC point on response curve.
6.	.01MFD	"	"	41.25MC 42.5MC 45MC 45.75MC 47.25MC	"	"		Check for response curve similar to figure 5. If necessary retouch A1 thru A4 for proper response.

SOUND IF ALIGNMENT

Use frequency modulated signal with 60 ∿ modulation and 450KC sweep. Use 120 ∿ sawtooth voltage in scope for horizontal deflection.

During sound IF alignment keep output of generator below the limiting level of the amplifiers. To check for limiting slightly increase the generator output, the response will increase in amplitude if the stages are not limiting.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
7.	.01MFD	High side to pin 1 (Grid) of 6AU6 (V8). Low side to B-.	4.5MC (450KC SWP)	4.5MC	Any channel not used locally	Vert. Amp. thru 10KΩ to Point (B). Low side to chassis.	A7, A8	Adjust for maximum amplitude and symmetry as per figure 6.
8.	.01MFD	"	"	"	"	Vert. Amp. thru 10KΩ to Point (C). Low side to chassis.	A9, A10	Adjust A9 so 4.5MC occurs at center of crossover lines as per figure 7. Adjust A10 for maximum amplitude and straightness of crossover lines.

RF ALIGNMENT

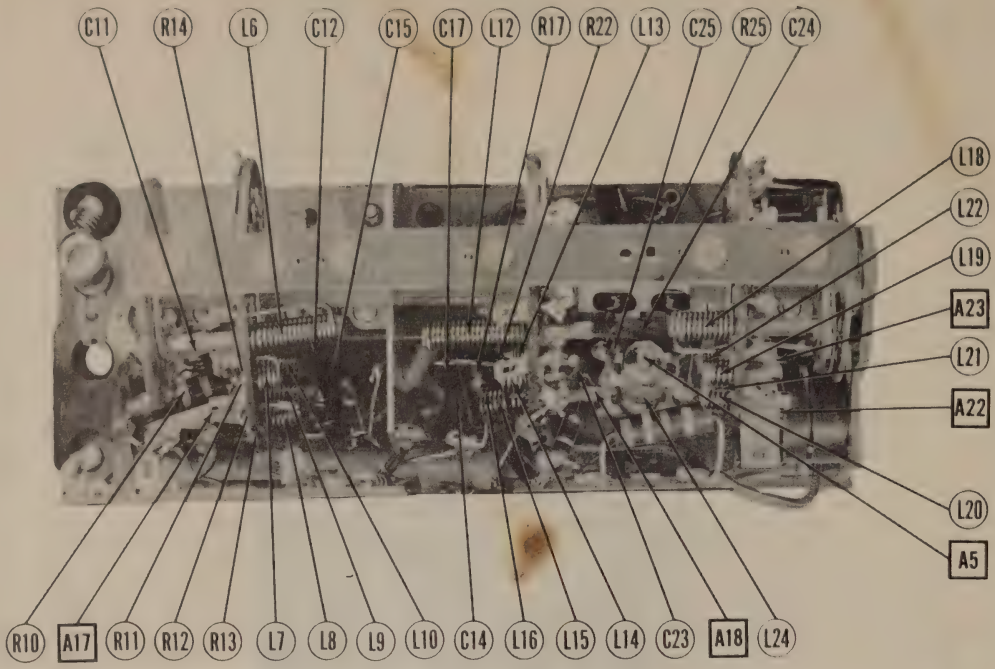
With the bias battery connected as during video IF alignment, adjust the contrast control to read -2.7 volts between pin 1 of V2 and B -.

Connect a 680 ohm 1/2 watt resistor across L24 (A4).

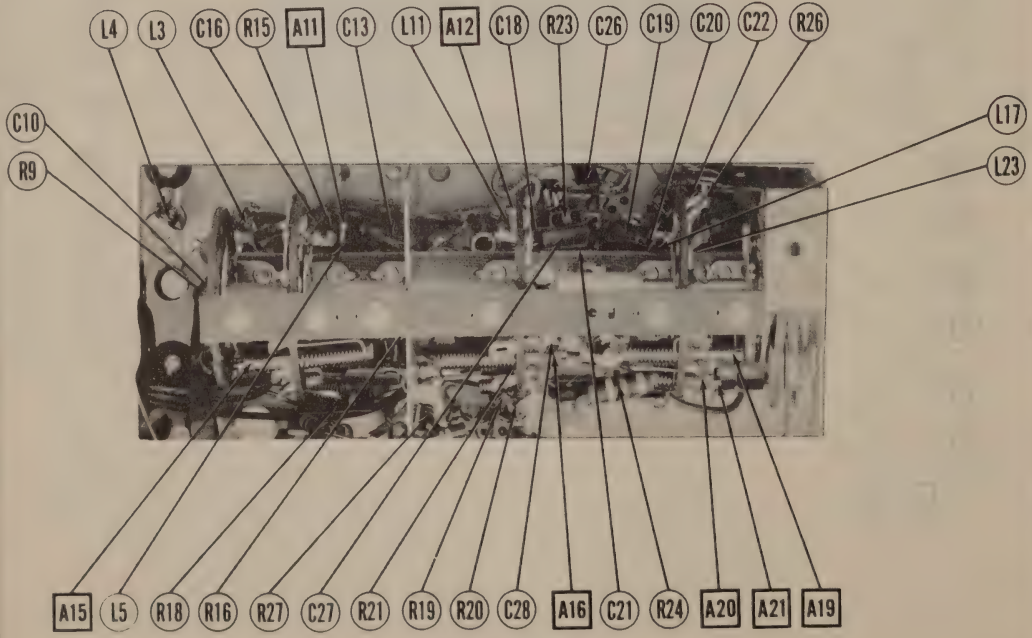
Disconnect the B+ line to the tuner and insert a 1000 ohm resistor in series with the B+ line. Connect a bank of approximately 400MFD, 350 volt capacitors between the tuner side of the 100 ohm resistor and B-. This will reduce the effects of hum on the response curve.

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
9.	Two 120Ω carbon res.	Across antenna terminals with 120Ω in each lead.	213MC (15MC SWP)	211.25MC 215.75MC	13	Vert. Amp. thru 10KΩ to Point (D). Low side to B-.	A11, A12	Adjust for response curve similar to figure 8.
10.	"	"	177MC (15MC SWP)	175.25MC 179.75MC	7	"	A13, A14	Adjust for response curve similar to figure 8. Recheck channel 13. If necessary repeat steps 3 and 4 until proper response is obtained.
11.	"	"	207MC (15MC SWP)	205.25MC 209.75MC	12	"		Check all channels for response above the limits shown in figure 9. If necessary make compromise adjustments on channels 7 or 13 depending on which is nearer the channel that is off frequency.
			201MC (15MC SWP)	199.25MC 203.75MC	11			
			195MC (15MC SWP)	193.25MC 197.75MC	10			
			189MC (15MC SWP)	187.25MC 191.75MC	9			
			183MC (15MC SWP)	181.25MC 185.75MC	8			
12.	"	"	85MC (15MC SWP)	83.25MC 87.75MC	6	"	A15, A16	Adjust A15 to place 83.25MC marker and A16 to place 87.75MC marker as shown in figure 10.
13.	"	"	79MC (15MC SWP)	77.25MC 81.75MC	5	"		Check for response above the limits shown in figure 11. If necessary make compromise adjustments of A15 and A16
			69MC (15MC SWP)	67.25MC 71.75MC	4			
14.	"	"	63MC (15MC SWP)	61.25MC 65.75MC	3	"	A17, A18	Adjust A17 to place the 61.25MC marker and A18 to place the 65.75MC marker as shown in figure 10.
15.	"	"	57MC (10MC SWP)	55.25MC 59.75MC	2	"		Check for response similar to figure 10.

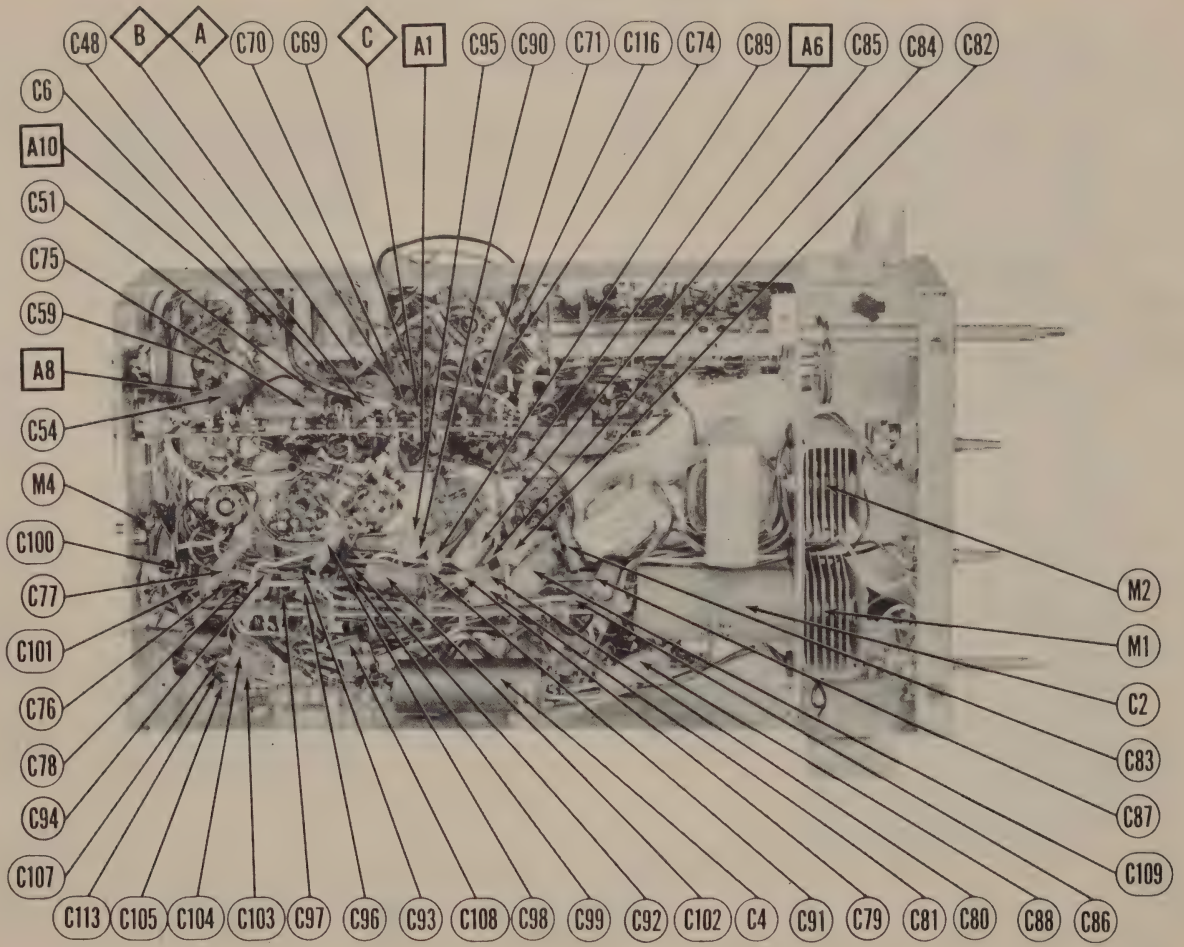


RF TUNER

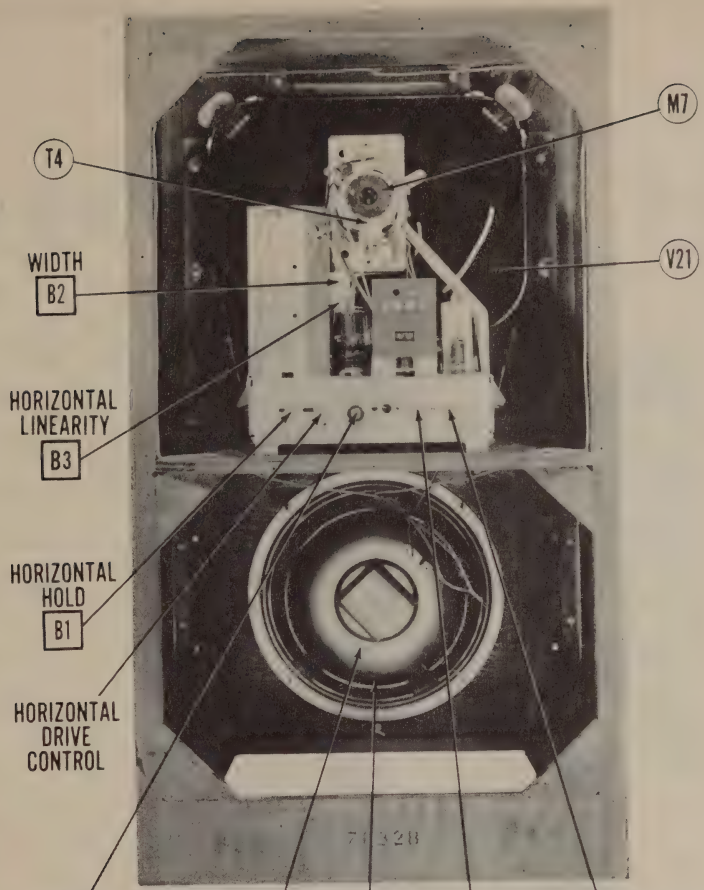


RF TUNER

CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW - CAPACITOR AND ALIGNMENT IDENTIFICATION



CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

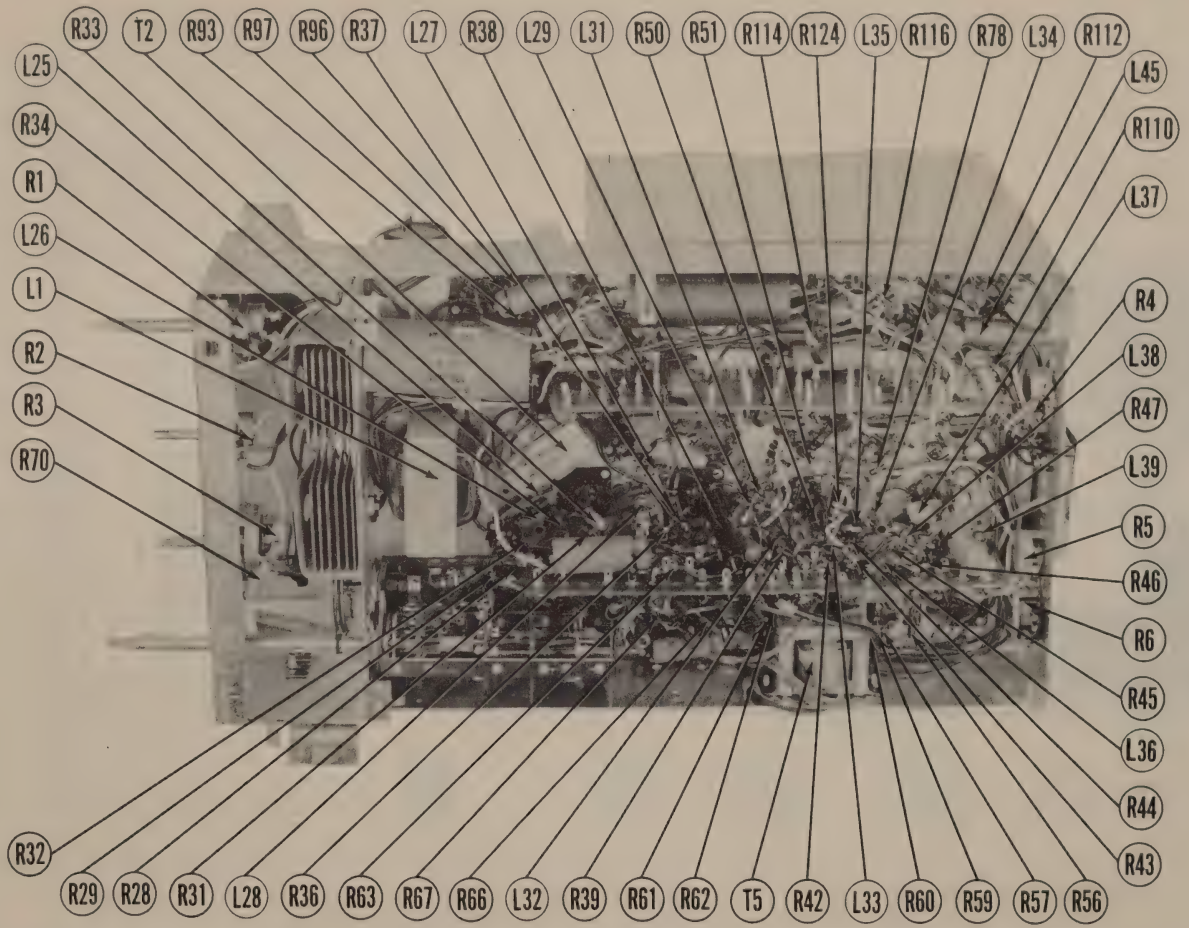
Turn the horizontal hold control to the mid-position of its range.

Adjust the horizontal frequency slug (B1) until the picture synchronizes horizontally.

Turn the horizontal drive control counter clockwise as far as possible without crowding the right side of the picture, or having vertical beaded lines appear.

Adjust the width slug (B2) until the picture fills the mask horizontally.

Adjust the horizontal linearity slug (B3) until the picture is symmetrical from left to right, slight readjustment of the horizontal drive control may be necessary for optimum results.



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

CHASSIS BOTTOM VIEW- RESISTOR IDENTIFICATION

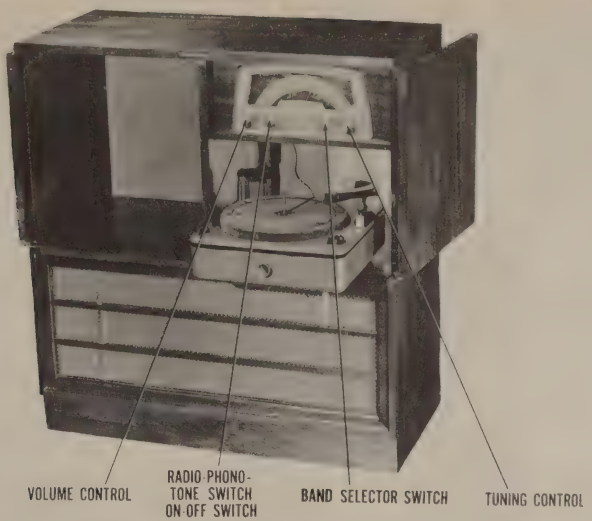
DISASSEMBLY INSTRUCTIONS

1. Remove eight push-on type control knobs.
2. Remove twelve wood screws holding rear cover in place. Remove rear cover.
3. Disconnect built-in antenna.
4. Disconnect speaker leads.
5. Remove four 3/16" hex head bolts and two 1/4 x 20 bolts holding chassis in cabinet.
6. Remove two 7/16" hex nuts holding picture tube brace to cabinet. Remove chassis.
7. Remove four 11/32 hex nuts holding speaker in cabinet. Remove speaker.

NOTE: FOR PICTURE TUBE REMOVAL IT IS NECESSARY TO REMOVE THE CHASSIS AS OUTLINED ABOVE.

DRIVE CORD STRINGING

GENERAL ELECTRIC
MODELS 752, 753

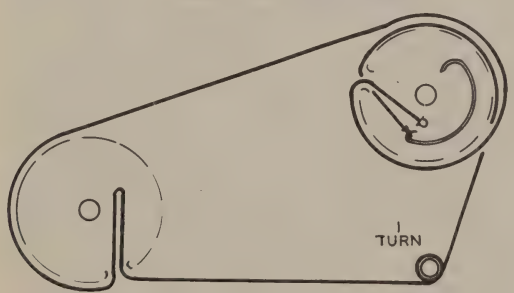


GENERAL ELECTRIC MODEL 752

TRADE NAME	General Electric, Models 752, 753
MANUFACTURER	General Electric Co., Electronics Dept., Electronics Park, Syracuse, New York
TYPE SET	AC Operated Combination Phono-Radio, AM-FM Superheterodyne Receiver with Loop Antenna
TUBES (EIGHT)	Types 6BE6 FM-AM Converter, 6BA6 FM RF Amp., 1st FM IF Amp., 6BA6 2nd FM IF-1st AM IF, 6AU6 Limiter, 6AU6 Phono Pre-Amp., 6T8 DET-AVC-AF, 6V6GT Power Output, 5Y3G Rectifier
POWER SUPPLY	105-125 Volts AC — RATING .53 Amp. at 117 Volts AC
TUNING RANGE-BROADCAST	540-1620KC — FREQ. MOD. 88-108MC

FOR SERVICE INFORMATION ON RECORD CHANGER GENERAL ELECTRIC MODEL P15 SIMILAR TO MILWAUKEE MODEL 11600 IN PHOTOFACT SET #73 FOLDER #7 OR RECORD CHANGER MANUAL CM-3.

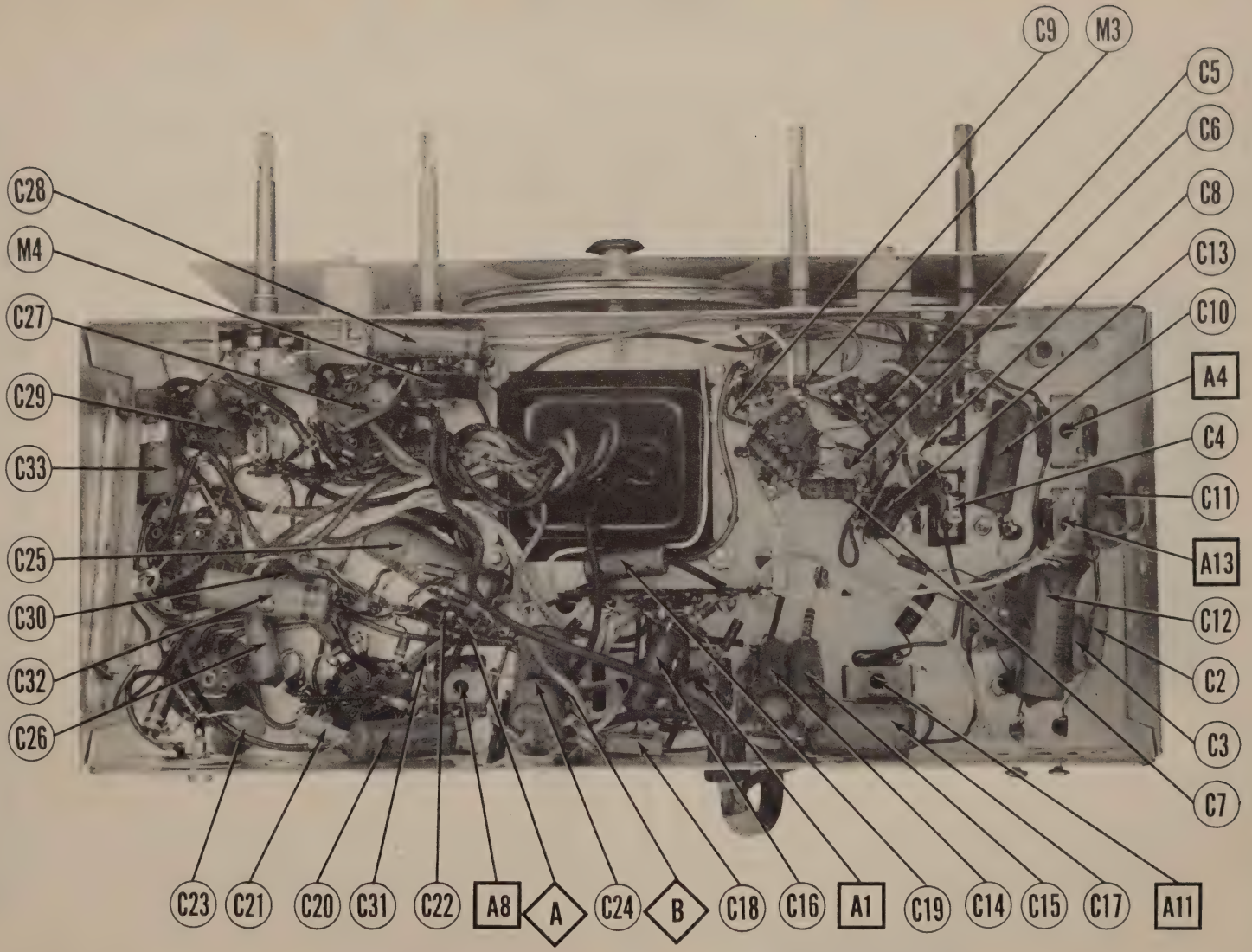
TUNING GANG FULLY CLOSED

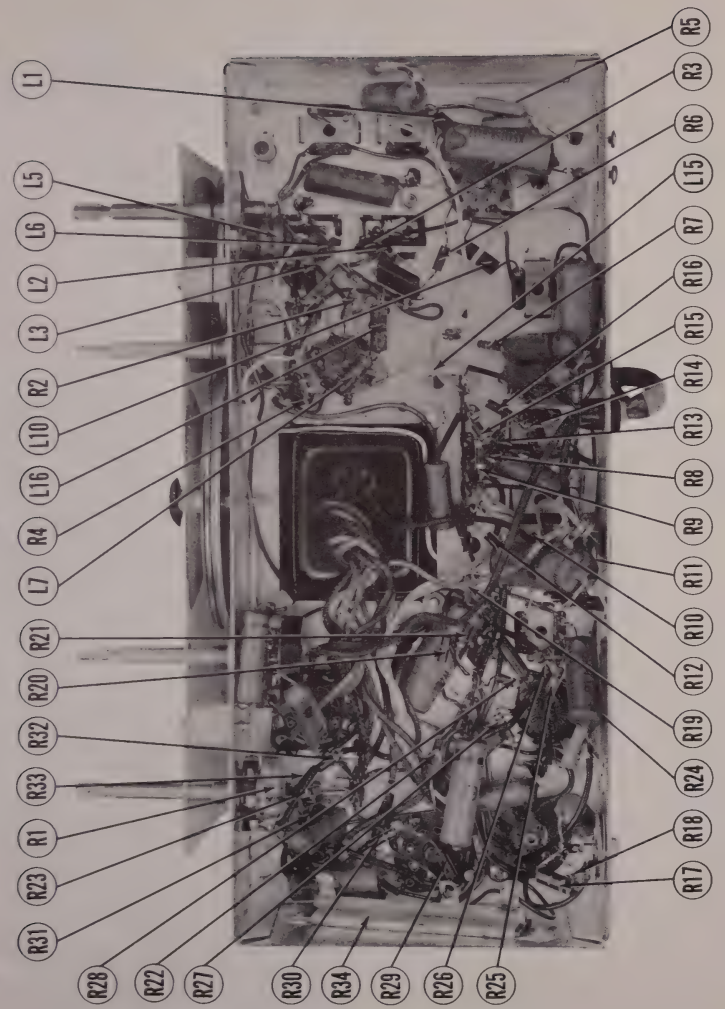


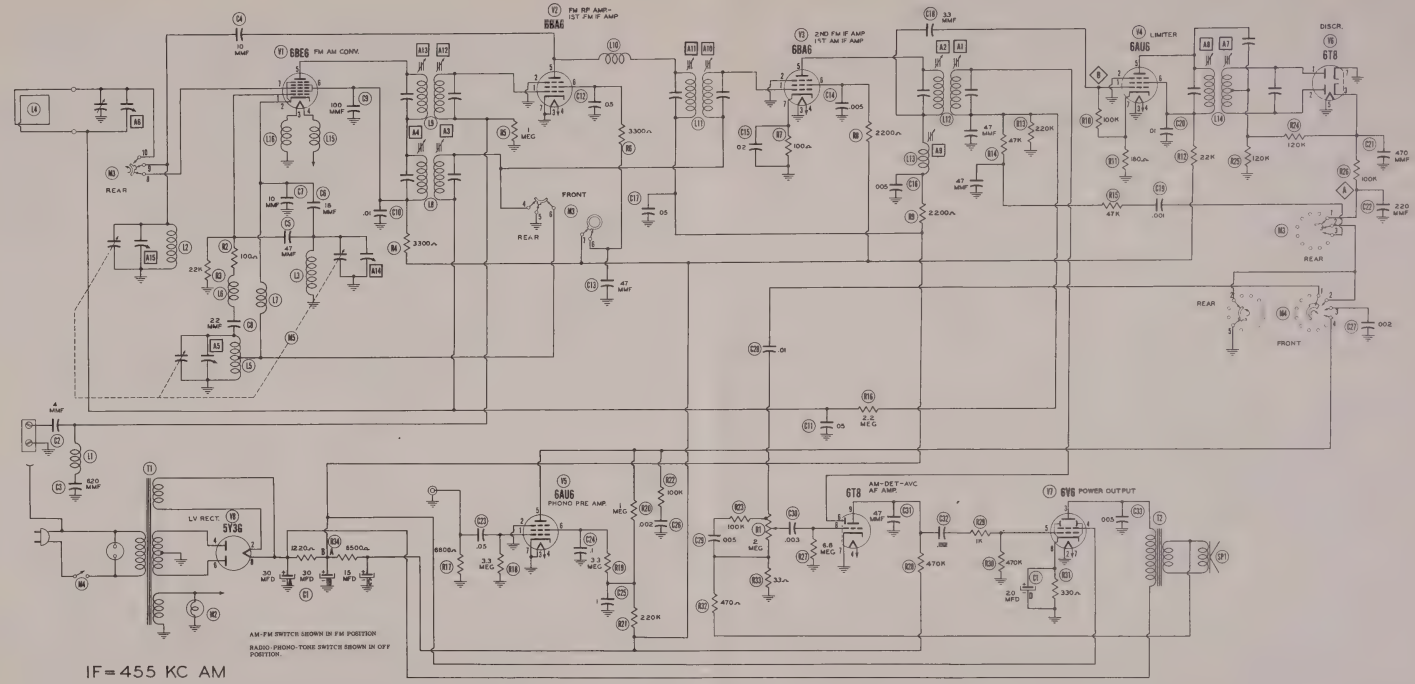
DIAL CORD DRIVE

HOWARD W. SAMS & CO., INC. • Indianapolis 1, Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed."
"Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1951 by Howard W. Sams & Co., Inc., Indianapolis, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America


C9
M3
C5
C6
C8
C13
C10
A4
C4
C11
A13
C12
C2
C3
C7
C28
M4
C27
C29
C33
C25
C30
C32
C26
C23
C21
C20
C31
C22
A8
A
C24
B
C18
C16
A1
C19
C14
C15
C17
A11




Y2 FM RF AMP-1ST FM IF AMP 6BA6
Y1 6BE6 FM AM CONV.
Y3 2ND FM IF AMP 1ST AM IF AMP 6BA6
Y4 LIMITER 6AU6
DISCR. Y6 6T8
REAR
FRONT
Y5 6AU6 PHONO PRE AMP
AM-DET-AVC AF AMP. 6T8
Y7 6V6 POWER OUTPUT
LV RECT. Y8 5Y3G
AM-FM SWITCH SHOWN IN FM POSITION
RADIO-PHONO-TONE SWITCH SHOWN IN OFF POSITION.

IF = 455 KC AM

IF = 10.7 MC FM

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BE6	74 [1] -6VDC ±8-5.5VDC‡	0 V	0V	6.3VAC	+95VDC ±90VDC ‡80VDC	+70VDC ±60VDC ‡55VDC	70V +-2VDC		
V 2	6BA6	-.5VDC	0V	0V	6.3VAC	+230 VDC	±0V	0V		
V 3	6BA6	80V ±-2VDC ‡-2VDC	0V	0V	6.3VAC	+185VDC ±200VDC ‡205VDC	+80VDC ±110VDC ‡115VDC	1.2VDC ‡1.4VDC		
V 4	6AU6	+0V	0V	9V	6.3VAC	+30VDC ±35VDC	+5VDC ±.7VDC	± .7VDC		
V 5	6AU6	-.5VDC	0V	0V	6.3VAC	+35VDC	15VDC	0V		
V 6	6T8	9-.8VDC +-.6VDC	1-.15VDC +-.6VDC	-.2VDC ±0V	6.3VAC	0V	-.6VDC	0V	-.6VDC ‡125VDC	140VDC ±42VDC
V 7	6V6GT	0V	0V	+235VDC ±260VDC	+310VDC ±320VDC	0V	+227VDC ±232VDC	6.3VAC	+15VDC ‡255VDC	
V 8	5Y3GT	0V	0V	‡255VDC ±285VDC	360VAC	0V	260VAC	0V	‡255VDC ±285VDC	

‡ TAKEN WITH VACUUM TUBE VOLTMETER

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BE6	22KΩ	22Ω ±2.6Ω	3Ω	3Ω	115KΩ	115KΩ ‡115Ω	115Ω ±3.4 Meg		
V 2	6BA6	1 Meg	0Ω	0Ω	1Ω	11.2KΩ	∞ Ind.	0Ω		
V 3	6BA6	1 MΩ ±3.4 Meg	0Ω	0Ω	1Ω	13.5KΩ	115KΩ	1090		
V 4	6AU6	190KΩ	0Ω	0Ω	1Ω	130KΩ	130KΩ	180Ω		
V 5	6AU6	1.5 Meg	0Ω	0Ω	1Ω	11.2 Meg	12.5 Meg ‡250KΩ	0Ω		
V 6	6T8	150KΩ ±82KΩ	270KΩ ±68KΩ	270KΩ ±78KΩ	1Ω	0Ω	∞ ±327KΩ	0Ω	6.8Meg	1175KΩ
V 7	6V6GT	470KΩ	0Ω	250Ω	11.2KΩ	470KΩ	1 Meg	1Ω	330Ω	
V 8	5Y3GT	Ind.	80KΩ	Ind.	75Ω	Ind.	75Ω	0Ω	80KΩ	

‡ MEASURED FROM PIN 8 OF V8

† TAKEN IN FM POSITION
± TAKEN IN AM POSITION
RADIO-PHONO SWITCH IN POSITION 2 UNLESS OTHERWISE STATED
■ TAKEN IN PHONO POSITION

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
© Howard W. Sams & Co., Inc. 1951

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set dial pointer, turn tuning gang fully closed and set the pointer to the small dot at the low frequency end of the dial scale.

AM ALIGNMENT

Loop should be maintained in same relative position to chassis as when receiver is in cabinet.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.01MFD	High side to pin 7 (Grid) of 6BE6 (V1). Low side to chassis.	455KC (400 ~ Mod.)	AM (CW)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
2.		Loop	1620KC	"	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		Loop	1500KC	"	Tune for max. output	"	A6	"

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
4.	.01MFD	High side to pin 1 (Grid) of 6BA6 (V3). Low side to chassis.	10.7MC (Unmod.)	FM (CCW)	Tuning gang fully open	DC Probe thru 220KΩ to Point Ⓧ. Common to chassis.	A7	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.
5.	.01MFD	"	See remarks column	"	"	"	A8	Detune the signal generator each side of 10.7MC and note the height of the peaks. Leave generator at the frequency of the smaller peak and adjust A8 for maximum deflection.
6.	.01MFD	High side to pin 1 (Grid) of 6BA6 (V3). Low side to chassis.	10.7MC	"	"	DC Probe thru 220KΩ to Point Ⓧ. Common to chassis.	A9	Adjust for maximum deflection.
7.	.01MFD	High side to pin 1 (Grid) of 6BA6 (V2). Low side to chassis.	"	"	"	"	A10, A11	"
8	.01MFD	High side to pin 1 (Grid) of 6BE6 (V1). Low side to chassis.	"	"	"	"	A12,	Unsolder the copper strap from pin 7 of V1. Adjust for maximum deflection. Resolder copper strap.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
4.	.01MFD	High side to pin 1 (Grid) of 6BA6 (V2) Low side to chassis.	10.7MC (450KC SWP)	FM (CCW)	Point of non-interference	Vert. Amp. thru 1 Meg. Jac Point Ⓧ. Low side to chassis.	A9, A10, All	Adjust for maximum amplitude and symmetry as per figure 1.
5.	.01MFD	High side to pin 1 (Grid) of 6BE6 (V1). Low side to chassis	"	"	"	"	A12, A13	Unsolder the copper strap from pin 1 of V1. Adjust A12 and A13 for maximum amplitude and symmetry as per figure 1. Resolder the copper strap.
6.	.01MFD	High side to pin 1 (Grid) of 6BA6 (V3). Low side to chassis	"	"	"	Vert. Amp. to Point Ⓧ. Low side to chassis.	A7, A8	Adjust A7 to place 10.7MC at center of "S" curve. Adjust A8 for maximum amplitude and straightness of diagonal line as per figure 2.
7.	If slight distortion is noted on weak "FM" stations, increase the FM IF bandwith, to a maximum of 140KC at 50% response, by stagger tuning A10 and A-11. Do not disturb any other adjustment.							

FM RF ADJUSTMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	: REMARKS
9.	Two 120Ω carbon res.	Across FM antenna terminals with 120Ω in each lead.	108MC (Unmod.)	FM	Tuning gang fully open	DC Probe thru 220KΩ to Point Ⓧ. Common to chassis.	A14	Adjust for maximum deflection.
10.	"	"	105MC	"	Tune for max. deflection.	"	A15	Rock tuning gang while adjusting A15 for maximum deflection.

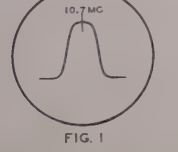


FIG. 1

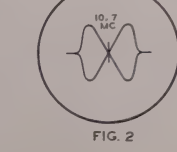


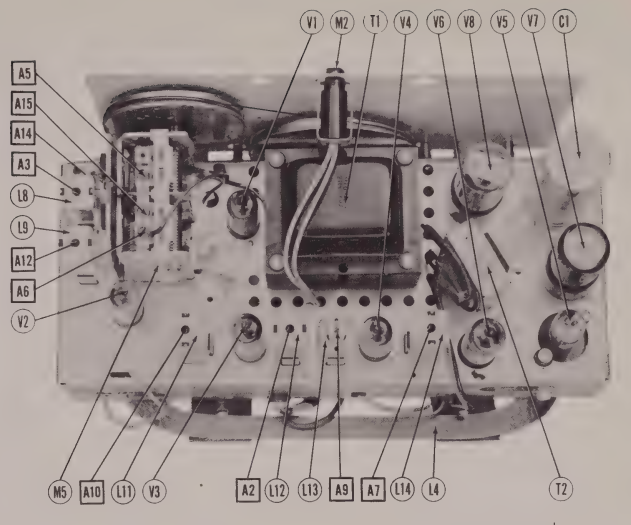
FIG. 2

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA G. E. PART No.	REPLACEMENT DATA STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	FM-AM Conv. FM RF Amp.	6BE6	6BE6	7CH	
V2	1st FM IF Amp. 2nd FM-AM IF	6BA6	6BA6	7BK	
V3	Limiter	6BA6	6BA6	7BK	
V4	Phase Pre-Amp.	6AU6	6AU6	7BK	
V5	FM Det.-1st AFC	6AU6	6AU6	7BK	
V6	AVC-AF Amp. Power Output	6T8	6T8/6GT	9E	
V7	AM Det. Rectifier	6T8	6T8/6GT	9E	
V8		12AT6	12AT6	12T	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	G. E. PART No.	ARROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES INSTALLATION NOTES (A)
C1A	30	400	RCE-039	A P6826B		UP32345C		TVL-4743	= Filter
B	30	400							▪ Filter
C	10	450							Bypass Cap.
D	30	25							Output Cath. Bypass
	30	500							
C2	.01	500	148P-30005		TCZ-4-47	SR3Y5	X5DK-47	MS-35	RF Coupling
C3	47		148P-30005		TCZ-4-47	SR3Y5	X5DK-47	MS-35	RF Coupling
C4	10		RCW-1060	SU3NPO	TCZ-10	SR5Q	N5DK-10	10C3	RF Coupling
C5	47		RCW-1047	S147	TCZ-47	SR5Q	N5DK-47	47C3	Osc. Grid Cap.
C6	10		RCW-1060	SU3NPO	TCZ-10	SR5Q	N5DK-10	10C3	Osc. Cathode
C7	10		RCW-1060	SU3NPO	TCZ-10	SR5Q	N5DK-10	10C3	Fixed Trimmer
C8	.01	600	RCW-1003	S110	D6-103	SW5Z5	G5DK-103	10C3	Osc. Det. Coup.
C9	100		RCW-1047	S1100	D6-101	SW5Z1	G5DK-100	100C3	Osc. Decoupling
C10	.01	800	UCC-040	P688-01	D6-103	PTE5B1		6TM-S1	Conv. Decoupling
C11	.05	600	UCC-045	P688-05	D6-503	PTE5B5		6TM-S5	AVC Bypass
C12	.05	600	UCC-045	P688-05	DF-503	PTE5B5		6TM-S5	1st IF Screen
C13	47	500	UCU-020	148P-30005	D6-470	SW5Q5	G5DK-47	1FM-49	RF Bypass *
C14	.005	500	UCU-020	148P-30005	D6-502	SW5Z5	G5DK-502	1FM-S5	1st IF Screen
C15	.02	300	UCC-041	P488-02	DF-203	PTE5B5		2TM-S2	2nd IF Cath.
C16	.005	600	UCC-039	P688-005	D6-502	PTE5B5	811-005	6TM-D5	2nd IF Plate Dec.
C17	.005	600	UCC-046	P688-005	D6-502	PTE5B5		6TM-D5	RF Bypass
C18	33	500	UCU-018	S133	D6-330	SW5Q4	G5DK-33	33C24	IF Coupling
C19	.001	800	UCC-035	P688-001	D6-102	PTE5D1	G5Z1J-001	6TM-D1	Audio Coupling
C20	.001	800	UCC-035	P688-001	D6-102	PTE5D1	G5Z1J-001	6TM-D1	Limiter Dec.
C21	470	500	UCU-044	1468-0005	D6-471	SW5Y5	G5Z5K-470	1FM-35	RF Bypass
C22	220	500	UCU-1038	1468-00035	D6-221	SW5Y25	G5Z5K-220	1FM-325	Limiter Decoupling
C23	220	500	UCU-1038	1468-00035	D6-221	SW5Y25		1FM-325	Audio Coupling
C24	.1	600	UCC-048	P688-1	DF-104	PTE5P1		6TM-P1	Phono Pre-Amp. Screen
C25	.1	600	UCC-048	P688-1	DF-104	PTE5P1		6TM-P1	Phono Pre-Amp. Plate
C26	.002	600	UCC-038	P688-002	D6-202	PTE5D2	G2DM-002	6TM-D2	Tone Comp.
C27	.002	500	UCC-038	P488-002	D6-202	PTE5D2	G2DM-002	6TM-D2	Tone Comp.
C28	.005	500	UCC-039	P488-005	D6-502	PTE5D5	811-005	6TM-D5	Audio Coupling
C29	.005	210	UCC-039	P688-005	D6-502	PTE5D5	811-005	6TM-D5	Audio Coupling
C30	470	500	UCU-044	1468-0005	D6-471	SW5Y5	G5Z5K-470	1FM-35	Audio Coupling
C31	.01	500	UCU-020	1468-00005	D6-470	SW5Q5	G5DK-103	1FM-49	Audio Coupling
C32	.02	600	UCC-041	P488-02	DF-203	PTE5B5	G5DK-47	6TM-S2	Audio Coupling
C33	300-600	50	UCU-059	P1068-300		PTE1B05		MB-105	Output Plate Byp.

* Not used in all models.

CONTROLS

ITEM No.	RATING RESIST.	RATING WATTS	REPLACEMENT DATA G. E. PART No.	REPLACEMENT DATA IRC PART No.	REPLACEMENT DATA CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	2 Meg.	1	RRC-141	Q1B-193X	A7-116	ANT-78	Volume control
B	Shaft		Not Req.	Not Req.	X38-3	AK-4	Attach to R1A per instructions

SET 123

FOLDER 5

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA G. E. PART No.	REPLACEMENT DATA IRC PART No.	IDENTIFICATION CODES
R2	100Ω		URD-1001		Parasitic Suppressor
R3	470Ω		URD-1047		Osc. Grid Leak
R4	33000		URD-1061	B1B-33000	Osc. Anode
R5	1 Meg.		URD-1105		1st IF Amp. Screen
R6	1.5 Meg.		URD-131	B1B-1500	2nd IF Amp. Screen
R7	100Ω		URD-1001	B1B-100	1st IF Amp. Cathode
R8	2200Ω		URD-1025	B1B-2200	2nd IF Amp. Cathode
R9	2200Ω		URD-1097	B1B-2200	2nd IF Amp. Screen
R10	100KΩ		URD-1097	B1B-100K	Limiter Grid
R11	220KΩ		URD-1081	B1B-220K	Limiter Decoupling
R12	22KΩ		URD-105	B1B-22K	Limiter Decoupling
R13	220KΩ		URD-1129	B1B-220K	AVC Diode Load
R14	470KΩ		URD-1049	B1B-470K	Diode Filter
R15	470KΩ		URD-099	B1B-470K	Diode Filter
R16	2.2 Meg.		URD-129	B1B-2.2 Meg.	AVC Network
R17	3.3 Meg.		URD-133	B1B-3.3 Meg.	Phono Pre-Amp. Screen
R18	3.3 Meg.		URD-133	B1B-3.3 Meg.	Phono Pre-Amp. Grid
R19	3.3 Meg.		URD-133	B1B-3.3 Meg.	Phono Pre-Amp. Decoupling
R20	1.5 Meg.		URD-131	B1B-1500K	Tone Compensation
R21	220KΩ		URD-105	B1B-220K	Phono Pre-Amp. Plate
R22	100KΩ		URD-097	B1B-100K	Tone Compensation
R23	120KΩ		URD-099	B1B-120K	Diac. Diode Load
R24	120KΩ		URD-099	B1B-120K	Diac. Diode Load
R25	120KΩ		URD-099	B1B-120K	Diac. Diode Load
R26	6.8 Meg.		URD-141	B1B-6.8 Meg.	AF Amp. Grid
R27	6.8 Meg.		URD-141	B1B-6.8 Meg.	AF Amp. Grid
R28	470KΩ		URD-113	B1B-470K	AF Amp. Plate
R29	470KΩ		URD-1047	B1B-470K	Parasitic Suppressor
R30	470KΩ		URD-113	B1B-470K	Output Grid
R31	330Ω	5%	URD-1047	B1B-330K-5%	Output Cathode
R32	470Ω		URD-1047	B1B-470K	Feedback Network
R33	33Ω		URD-103	B1B-33	Feedback Network
R34A	6500Ω		WRT-003	BW-1-33	Filter-Wire Wound
B	6500Ω				Filter-Wire Wound

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	REPLACEMENT DATA G. E. PART No.	REPLACEMENT DATA STANCOR PART No.	REPLACEMENT DATA ARGO PART No.	CHICAGO PART No.
T1	117VAC 50~ (a) .53A	540VCT 5VAC @ .088ADC	6.3VAC @ 2.5A	RTF-3041	PM-8404	P-3093	PB-70 ①

① Add series resistor to reduce plate voltage.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA G. E. PART No.	REPLACEMENT DATA STANCOR PART No.	REPLACEMENT DATA ARGO PART No.	CHICAGO PART No.	INSTALLATION NOTES
T2	6KΩ	3.75Ω	650Ω	.5Ω	RTO-083	A-3677	A-3580	RO-103 ①	② Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS FIELD	RATINGS V. C. IMP.	REPLACEMENT DATA G. E. PART No.	VIKING PART No.	QUAM PART No.	INSTALLATION NOTES
SP1	PM	2.5 Ω	8121D7	12212	12A31	
SP2	FIELD	V. C. IMP.				
	11 3/8"	1" DIA.				

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA G. E. PART No.	REPLACEMENT DATA METSENER PART No.	REPLACEMENT DATA IRC PART No.	NOTES
L1	FM Ant.	0Ω		RLL1-088			
L2	FM RF Coil	0Ω		RLL1-089			
L3	FM Osc.	0Ω		RLC-102			
L4	Loop Ant.	1.4Ω		RLL1-039			
L5	Loop Ant.	1.4Ω		RLL1-046			
L6	RF Choke	2Ω		RLL-123			
L7	RF Choke	2Ω		RLL1-122	14-1060	C1A	2.2 microhenries
L8	RF Choke	2Ω	2Ω	RLL1-122		C1A	2.2 microhenries
L9	1st FM IF	.9Ω	.9Ω	RTL-097	16-8758		
L10	2nd FM IF	.9Ω	.9Ω	RTL-096	16-3487		
L11	RF Choke	0Ω		RLL1-124			
L12	2nd AM IF	18Ω	18Ω	RTL-098	16-3487		
L13	3rd FM IF	1.8Ω	1.8Ω	RTL-116	16-8758		
L14	Det. Trans.	1.8Ω	1.8Ω	RTL-100			
L15	Fil. Choke	2Ω		RLL-123		C1A	2.2 microhenries
L16	Fil. Choke	2Ω		RLL1-122		C1A	2.2 microhenries

PHONO CARTRIDGE and NEEDLE

ITEM No.	REPLACEMENT DATA G. E. PART No.	REPLACEMENT DATA ASTATIC PART No.	REPLACEMENT DATA SHURE PART No.	REMARKS
M1	RPX-1660	CORNICE-WHITE	CORNICE-WHITE	

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	REPLACEMENT DATA BEAD COLOR	REPLACEMENT DATA G. E. PART No.	NOTES
M2	Bayonet	6-8	.15	Brown		Type #47

MISCELLANEOUS

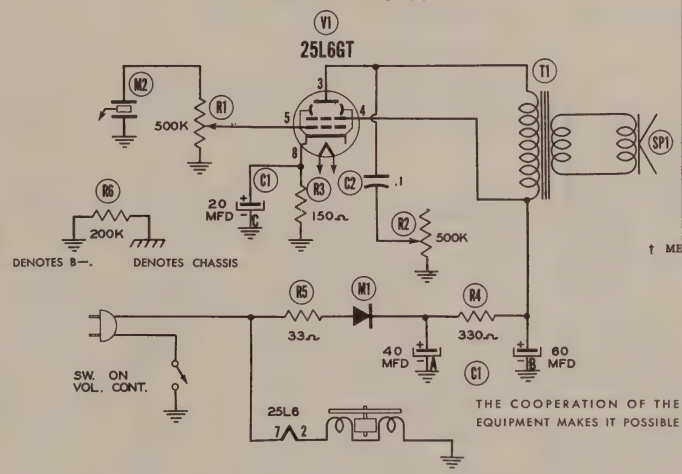
ITEM No.	PART NAME	G. E. PART No.	NOTES
M3	Switch	RSW-071	AM-FM
M4	Switch	RSW-080	Radio-Phono-Tone
M5	Dial Cord	RCD-1043	(31-4975MF, 13-155MMF)
	Dial Pointer	RDP-1053	
	Knob	RDK-214	
	Knob	RDK-219	
	Escutcheon	RDE-1	
	Arrow		

HUDSON MODEL 332-H

TRADE NAME	Hudson, Model 332-H
MANUFACTURER	Hudson Electronics Corp., 110 E. 3rd St., Mt. Vernon, New York
TYPE SET	AC Operated Phono Player with 1 Tube Amplifier
TUBES (ONE)	Type 25L6GT Power Output

POWER SUPPLY 110-120 Volts AC RATING .37 Amp. at 117 Volts AC

AF AMP - POWER OUTPUT



Pin No.	25L6GT Volt.	Res.
1	0Ω	Inf.
2	100VAC	20Ω
3	105VDC	†480Ω
4	110VDC	†320Ω
5	0V	60Ω
6	0V	Inf.
7	117VAC	35Ω
8	7.6VDC	150Ω

† MEASURED FROM OUTPUT OF M1.

THE COOPERATION OF THE MANUFACTURER OF THIS EQUIPMENT MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

© Howard W. Sams & Co., Inc. 1951

123-6

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

HOWARD W. SAMS & CO., INC. • Indianapolis 1, Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1951 by Howard W. Sams & Co., Inc., Indianapolis, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: HUDSON PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	Power Output	25L6GT	25L6GT	7AC	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: HUDSON PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	150		AF1010D4A		UP6415C		TVL-3430	▲ Filter
B	60	150							■ Filter
C	20	25							Output Cathode
C2	.1	200		P288-1	DF-104	PTE4P1		2TM-P1	Tone Compensation

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: HUDSON PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	500KΩ	½		Q13-133	AG-60-Z	B-60-S	Volume control
B	Shaft			Not Req.	FS-3	Not Req.	Attach to R1A per instructions
C	Switch			76-1	SWB	Not Req.	Attach to R1A per instructions
R2A	500KΩ	½		Q13-133	AG-60-Z	B-60	Tone control
B	Shaft			Not Req.	FS-3	Not Req.	Attach to R2A per instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: HUDSON PART No.	IRC PART No.	IDENTIFICATION CODES
R3	150Ω	1		BW-1-150	Output Cathode-Wire Wound
R4	330Ω	2		BTB-330	Filter
R5	33Ω	2			Rectifier Ballast
R6	200KΩ	½		BTS-220K	Isolation

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: HUDSON PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
T1	2.4KΩ	3.3Ω	150Ω	.6Ω		A-3332 ①	A-2928 ①	RO-2 ①	① Bend mounting tabs down file out slots and mount on original bracket.

SPEAKER

ITEM No.	RATINGS: FIELD RES.	RATINGS: V. C. IMP.	REPLACEMENT DATA: HUDSON PART No.	VIKING PART No.	QUAM PART No.	NOTES
SP1	PM	3.3Ω		5J4	5A07	
	CONE DIA.	V. C. DIA.				
SP2	4 5/8"	9/16"				

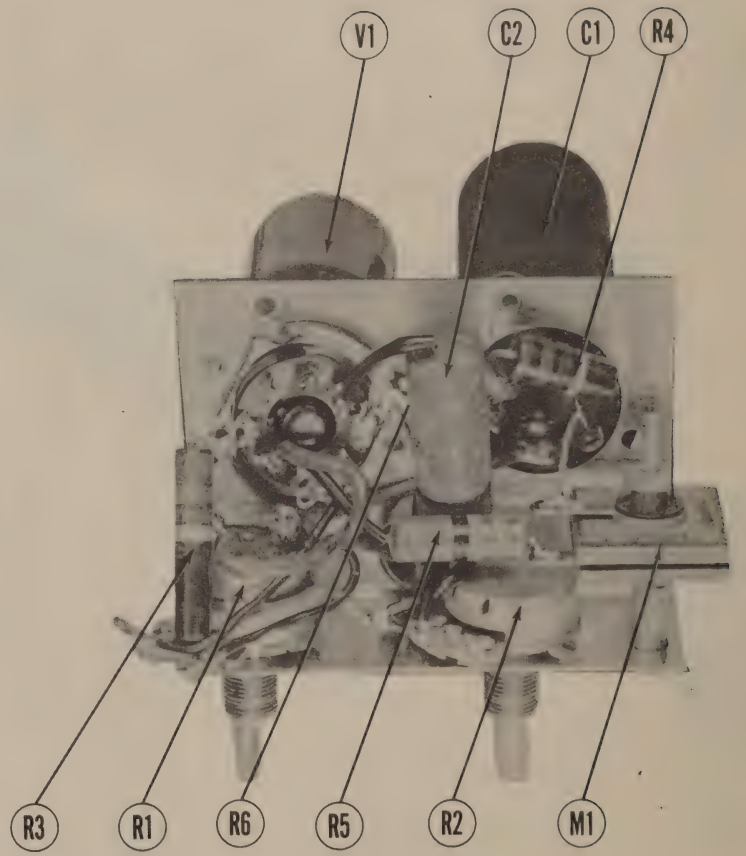
SELENIUM RECTIFIER

ITEM No.	RATING: CURRENT	REPLACEMENT DATA: HUDSON PART No.	SYLVANIA PART No.	SELETRON PART No.	NOTES
M1	.052ADC		NB-5	8J1	

PHONO CARTRIDGE and NEEDLE

ITEM No.	REPLACEMENT DATA: HUDSON PART No.	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE	SHURE PART No. CARTRIDGE	SHURE PART No. NEEDLE	REMARKS
M2		L-92-33 507-L-92-33†	Optional	W53MG	A64MG	† Tone Arm Assembly

ASTATIC AND SHURE NEEDLE LISTINGS SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGES LISTED.



KNIGHT
MODEL 5H700

KNIGHT
MODEL 5H700

KNIGHT MODEL 5H700

TRADE NAME	Knight, Model 5H700
SUPPLIER	Allied Radio Corp., 833 W. Jackson Blvd., Chicago 7, Illinois
TYPE SET	AC Operated Combination Phono-Radio Superheterodyne Receiver with Loop Antenna
TUBES (FIVE)	Types 12SA7 Converter, 12SK7 IF Amp., 12SQ7 DET-AVC-AF, 50L6GT Power Output, 35Z5GT Rectifier
POWER SUPPLY	110-120 Volts AC
RATING	.22 Amp. at 117 Volts AC
TUNING RANGE—BROADCAST	540-1620KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn tuning cap fully closed and set pointer parallel with base of dial.
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Fashion loop of several turns of wire and radiate signal into loop of receiver.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.		See instructions above	455KC (400 ∿ Mod.)	Tuning gang fully closed	Across voice coil	A1, A2, A3, A4	Short circuit the oscillator section of tuning gang. Turn A6 maximum clockwise (tight). Adjust A1 thru A4 for maximum output.
2.		"	1620KC	Tuning gang fully open	"	A5	Remove short from oscillator. Adjust for maximum output.
3.		"	1400KC	Tune for max. output	"	A6	Adjust for maximum output.
4.		"	600KC	"	"		Adjust end plates of RF section of tuning gang.
5.		"	1400KC	1400KC	"		Check tracking. If necessary repeat steps 3, 4 and 5.

FOR SERVICE INFORMATION ON RECORD CHANGER SEE V-M MODEL 950 PHOTOFACT SET #107 FOLDER 13 OR CM-3

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed."
"Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1951 by Howard W. Sams & Co., Inc., Indianapolis, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

PARTS LIST AND DESCRIPTIONS

KNIGHT MODEL 5H700

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: KNIGHT PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	Converter	12SA7	12SA7	8R	
V2	IF Amp.	12SK7	12SK7	8N	
V3	DET.-AVC-AF	12SQ7	12SQ7	8Q	
V4	Power Output	50L6GT	50L6GT	7AC	
V5	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: KNIGHT PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CENTRALAB PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	20	150	1003	PRS50/20-20-20		EDL22215		TVA-3440	Filter-Red
B	20	150		PRS25/25		BR252A		TVA-1205	Filter-Red
C	20	150							Filter-Red
D	20	25							Output Cath.-Yellow
C2	.1	200	804	P288-1	DF-104	PTE4P1		2TM-P1	AVC Filter
C3A	100		*811	SI100	*PC-50	5W5T1	GP1K-100	19C11	Diode RF Filter
B	100			SI100		5W5T1	GP1K-100		Diode RF Filter
C4	10000		†	BPD-01	DD-103	PTE4SI	821-01	36C1	Audio Coupling
C5	250		817	SI250	D6-251	5W5T25	GP2K-251	1FM-325	AF Amp. Plate
C6	10000		‡	BPD-01	DD-103	PTE6SI	821-01	6TM-SI	Audio Coupling
C7	600	500	905	1467-006	D6-562	1D5D6		1FM-26	Tone Compensation
C8	.01	600	802	P688-01	D6-103	PTE6SI	821-01	6TM-11	Output Plate Bypass
C9	.1	200	804	P288-1	DF-104	PTE4P1		72P52	Line Isolation
C10	.05	600	803A	P688-05	DF-503	PTE6S5		6TM-S5	Line Filter

* Items C3A, C3B and R5 are combined into one unit, obtainable under Mfgr's part No. 811.
† Items C4 and R8 are combined into one unit, obtainable under Mfgr's part No. 813.
‡ Items C6 and R10 are combined into one unit, obtainable under Mfgr's part No. 814.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: KNIGHT PART No.	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: CLAROSTAT PART No.	REPLACEMENT DATA: CENTRALAB PART No.	INSTALLATION NOTES
R1A	500KΩ	½	401	Q13-133	15/16-60-Z	B8K-60-S	Volume control
B	Switch		Not Req.	76-1	SPST Sw #	Not Req.	Attach to R1A per instructions
R2	50KΩ	½	403	Q13-123			Tone control

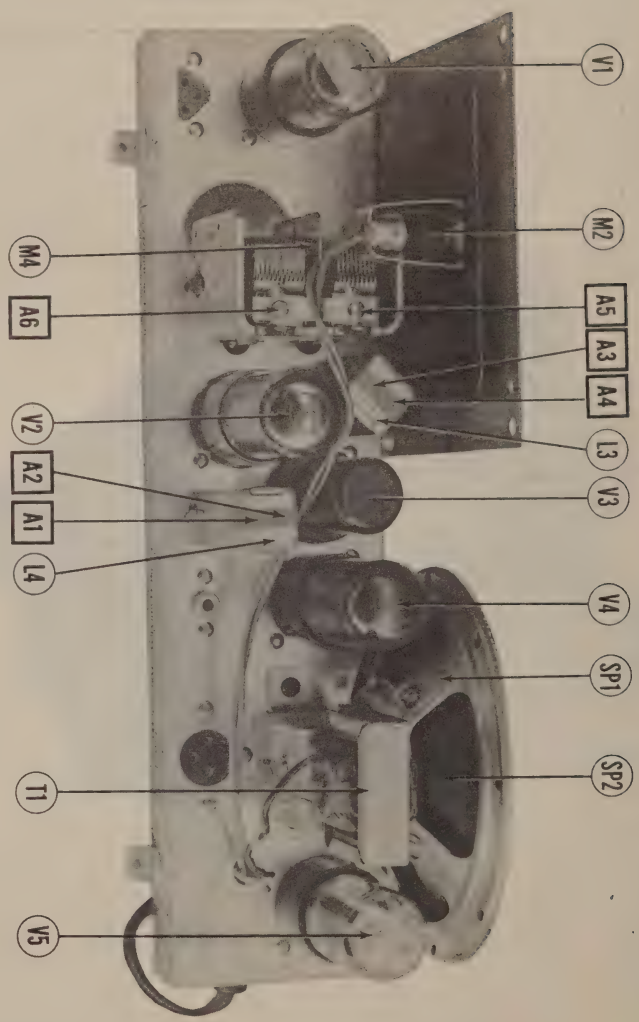
Switch is attached factory.

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: KNIGHT PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
R3	22KΩ	½	517	BTS-22K	Osc. Grid
R4	2.2 Meg.	½	515	BTS-2.2 Meg.	AVC Network
R5	50KΩ	½	*	BTS-47K	Diode Filter
R6	510KΩ	½	502	BTS-470K	Volume Control Shunt
R7	1 Meg.	½	516	BTS-1 Meg.	Series Phono Input
R8	5 Meg.	½	†	BTS-4.7 Meg.	AF Amp. Grid
R9	47Ω	½	520	BW-½-47	AF Amp. Cathode
R10	250KΩ	½	‡	BTS-270K	AF Amp. Plate
R11	510KΩ	½	502	BTS-470K	Output Grid
R12	150Ω	½	505	BW-½-150	Output Cathode
R13	1000Ω	1	607	BW-1-1000	Filter
R14	330Ω	1	609	BW-1-330	Filter
R15	47Ω	½	520		Rect. Ballast

* Items C3A, C3B and R5 are combined into one unit, obtainable under Mfgr's part No. 811.
† Items C4 and R8 are combined into one unit, obtainable under Mfgr's part No. 813
‡ Items C6 and R10 are combined into one unit, obtainable under Mfgr's part No. 814.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		KNIGHT PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T1	2.3KΩ	3.4Ω	174Ω	.5Ω	1201	A-3876 ①	A-2928 ①	RO-2 ①	① Bend mounting tabs down and mount on original bracket.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			KNIGHT PART No.	JENSEN PART No.	QUAM PART No.	
	FIELD	V. C. IMP.		ST-107 ②		
SP1	PM	3.4Ω	2607	MOD. P5-V	5A07 ②	② Drill and tap magnet frame and remount output transformer.
	CONE DIA.	V. C. DIA.				
SP2	4 5/8"	9/16"				

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	KNIGHT PART No.	MEISSNER PART No.	
L1	Loop Ant.	1.5Ω		1512		
L2	Osc. Coil	9Ω			14-1073	Tapped at 1Ω
L3	1st IF	13Ω	13Ω	1402	16-6678	
L4	2nd IF	13Ω	13Ω	1402	16-6678	

PHONO CARTRIDGE and NEEDLE

ITEM No.	REPLACEMENT DATA					REMARKS
	KNIGHT PART No.	ASTATIC PART No.		SHURE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M1		AC-AG-J	A-AG	W26B	A66U	

ASTATIC AND SHURE NEEDLE LISTINGS SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGES LISTED.

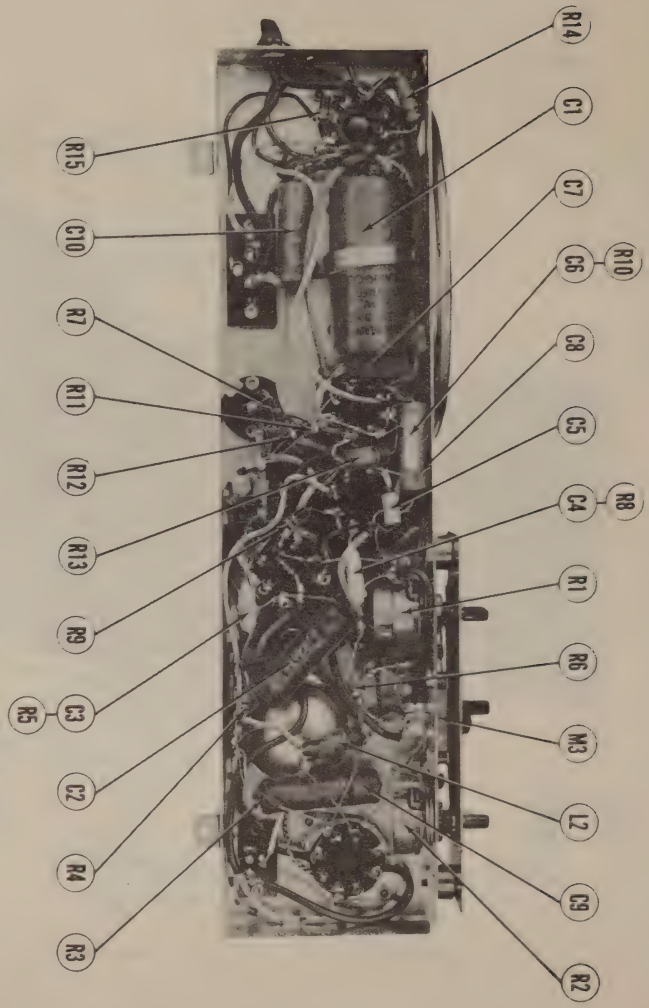
DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					KNIGHT PART No.		
M2	Bayonet	6-8	.15	Brown			Type #47

MISCELLANEOUS

ITEM No.	PART NAME	KNIGHT PART No.	NOTES
M3	Switch	1892	Radio-Phono
M4	2 Gang Var. Cap.	1004A	(18-394MMF, 31-202MMF)
	Dial	1722B	
	Dial Pointer	1736A	

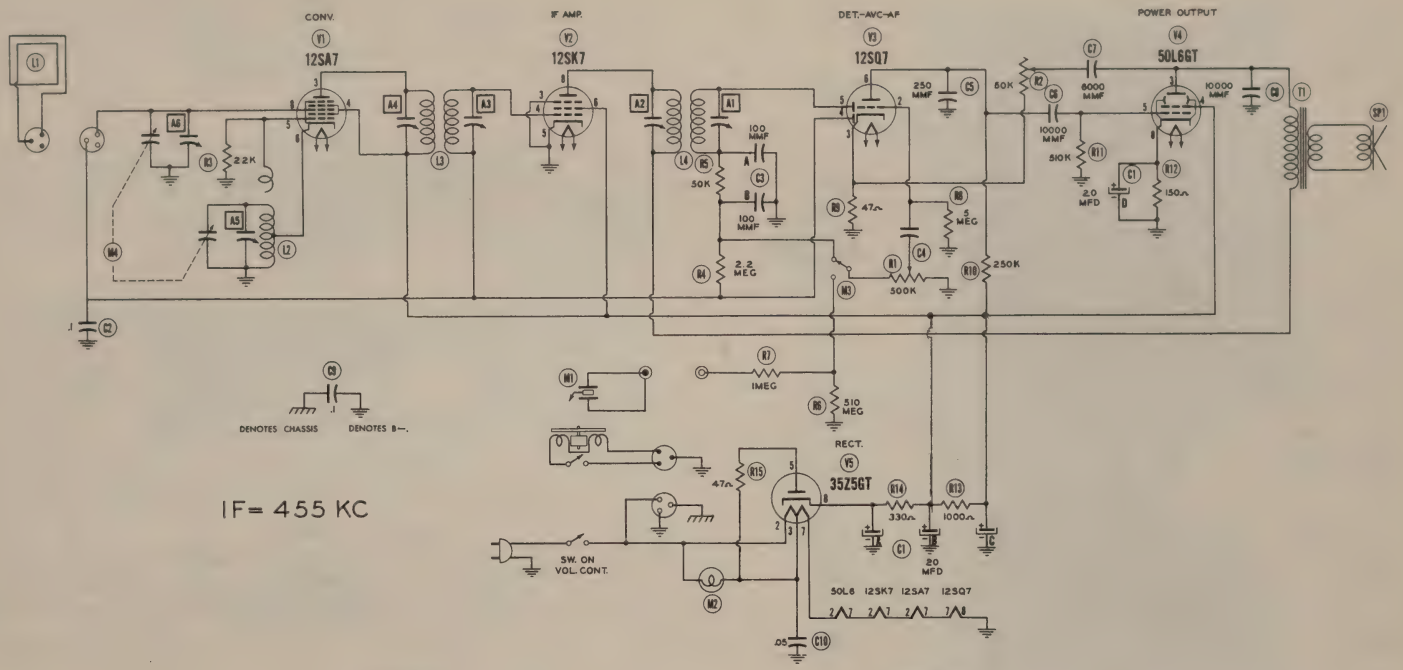
CHASSIS—BOTTOM VIEW



SET 123
FOLDER 7

KNIGHT MODEL 5H700

KNIGHT MODEL 5H700



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	12SA7GT	0V	23VAC	80VDC	80VDC	8-7VDC	0V	12VAC	-.6VAC
V 2	12SK7GT	0V	36VAC	0V	-.5VDC	0V	80VDC	23VAC	90VDC
V 3	12SQ7	0V	-.7VDC	0V	-.5VDC	-.3VDC	41VDC	12VAC	0V
V 4	50L6GT	0V	85VAC	85VDC	80VDC	0V	90VDC	36VAC	5.2VDC
V 5	3525GT	0V	117VAC	112VAC	0V	110VAC	90VDC	85VAC	110VDC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	12SA7GT	Inf.	23Ω	†1.3KΩ	†1.3KΩ	20KΩ	1Ω	12Ω	2.7 Meg.
V 2	12SK7GT	0Ω	36Ω	0Ω	2.7 Meg.	0Ω	†1.3KΩ	23Ω	†330Ω
V 3	12SQ7	0Ω	5 Meg.	47Ω	2.7 Meg.	550KΩ	†330KΩ	12Ω	0Ω
V 4	50L6GT	0Ω	85Ω	†500Ω	†1.3KΩ	440KΩ	†330Ω	36Ω	150Ω
V 5	3525GT	Inf.	110Ω	108Ω	Inf.	180Ω	50KΩ	85Ω	50KΩ

ALL MEASUREMENTS TAKEN FROM PIN 1 OF V2 (B-) UNLESS OTHERWISE STATED.

‡ TAKEN WITH VACUUM TUBE VOLTMETER

† MEASURED FROM PIN 8 OF V5

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

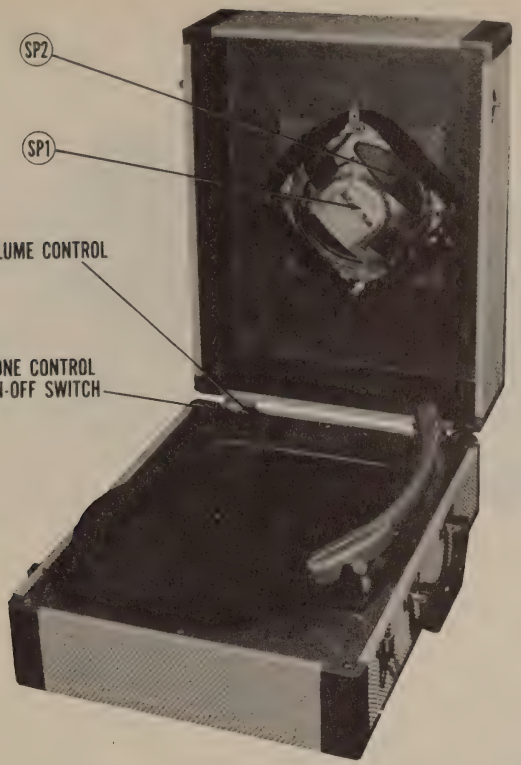
A PHOTOFACT STANDARD NOTATION SCHEMATIC

©Howard W. Sams & Co., Inc. 1951

123-7

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of + 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

MASCO
MODEL T-16



MASCO MODEL T-16

TRADE NAME	Masco, Model T-16		
MANUFACTURER	Mark Simpson Mfg. Co. Inc., 32-28 49 St., Long Island City 3, New York		
TYPE SET	AC Operated 3 Speed Player With 2 Tube Amplifier		
TUBES (TWO)	Types 12SJ7 AF Amp., 50L6GT Power Output		
POWER SUPPLY	110-120 Volts AC	RATING	.27 Amp. @ 117 Volts AC

MASCO
MODEL T-16

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1951 by Howard W. Sams & Co., Inc., Indianapolis, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		MASCO PART No.	STANDARD REPLACEMENT		
V1	AF Amp.	12SJ7	12SJ7	8N	
V2	Power Output	50L6GT	50L6GT	7AC	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	MASCO PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	
C1A	30	150		AF66D		UP3315		TVL-2422	■ Filter
B	30	150							▲ Filter
C2	.1	200		P288-1	DF-104	PTE4P1		2TM-P1	Phono Isolation
C3	.01	600		P688-01	D6-103	PTE6S1	821-01	6TM-S1	Audio Coupling
C4	.005	600		P688-005	D6-502	PTE6D5	811-005	6TM-D5	Tone Comp.
C5	.005	600		P688-005	D6-502	PTE6D5	811-005	6TM-D5	Output Plate
C6	.1	600		P688-1	DF-104	PTE6P1		6TM-P1	Line Isolation

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA			INSTALLATION NOTES	
	RESIST-ANCE	WATTS	MASCO PART No.	IRC PART No.	CLAROSTAT PART No.		
R1A	500KΩ	½		Q13-133	AM-60-Z	B-60	Volume control
B	Shaft			Not req.	RS-2	Not req.	Attach to R1A per instructions
R2A	500KΩ	½		Q13-133	AM-60-Z	B-60-S	Tone control
B	Shaft			Not req.	RS-2	Not req.	Attach to R2A per instructions
C	Switch			76-1	SW-A	Not req.	Attach to R2A per instructions

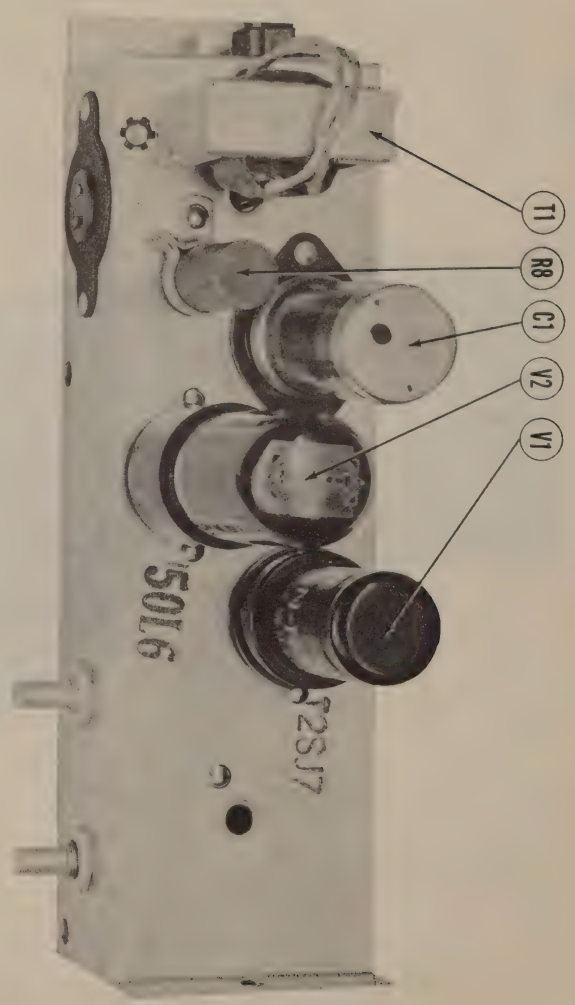
RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	MASCO PART No.	IRC PART No.	
R3	2200Ω	½		BTS-2200	AF Amp. Grid
R4	47KΩ	½		BTS-47K	AF Amp. Plate
R5	75Ω	1		BW-1-75	Output Cathode - See Note
R6	10KΩ	½		BTS-10K	Filter
R7	18Ω	½			Surge Limiter
R8	390Ω	10			Filament Dropping

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		MASCO PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T1	2.5KΩ	4Ω	185Ω	.7Ω		A-3876	A-2928	RO-2	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			MASCO PART No.	JENSEN PART No.	QUAM PART No.	
	FIELD	V. C. IMP.		ST108		
SP1	PM	4Ω		Mod. P6-X	6A1	
	CONE DIA.	V. C. DIA.				
SP2	5 9/16"	9/16"				

SELENIUM RECTIFIER

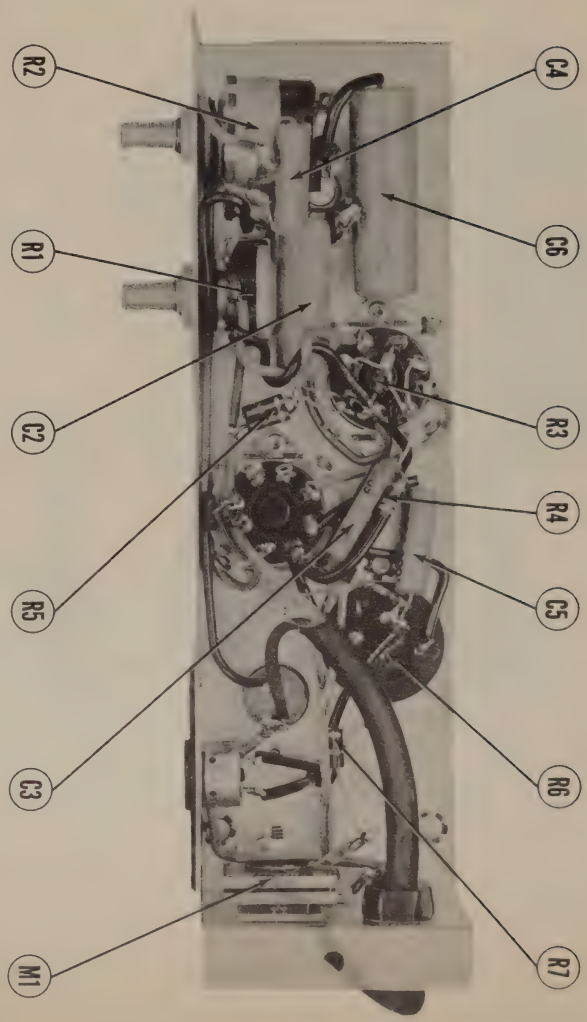
ITEM No.	RATING	REPLACEMENT DATA			NOTES
	CURRENT	MASCO PART No.	SYLVANIA PART No.	SELETRON PART No.	
M1	60MA		NB-5	8J1	

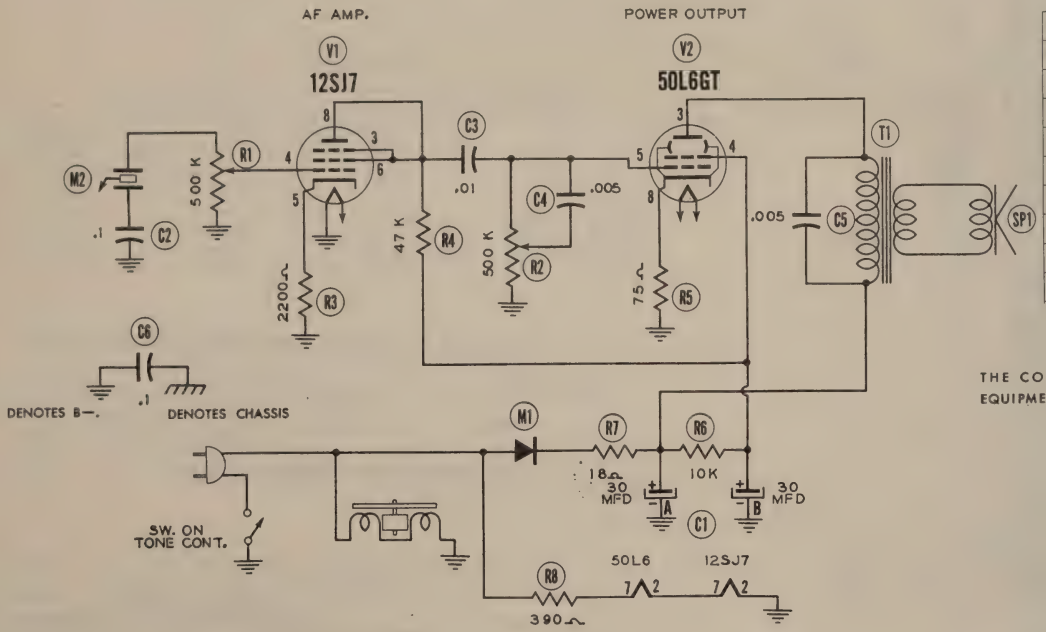
PHONO CARTRIDGE and NEEDLE

ITEM No.	REPLACEMENT DATA					REMARKS
	MASCO PART No.	ASTATIC PART No.		SHURE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M2		LQD-1J	"Q"			
		400-D †	"Q-33"			† Arm Assembly

ASTATIC NEEDLE LISTINGS SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGES LISTED.

CHASSIS—BOTTOM VIEW





Pin No.	12SJ7 Volt.	12SJ7 Res.	50L6GT Volt.	50L6GT Res.
1	0V	0Ω	0V	Inf.
2	0V	0Ω	13VAC	13Ω
3	50VDC	†57KΩ	125VDC	†100Ω
4	0V	0Ω	90VDC	†10KΩ
5	.2VDC	2.2KΩ	2.2VDC	500KΩ
6	50VDC	†57KΩ	0V	Inf.
7	13VAC	13Ω	65VDC	65Ω
8	50VDC	†57KΩ	4.4VDC	75Ω

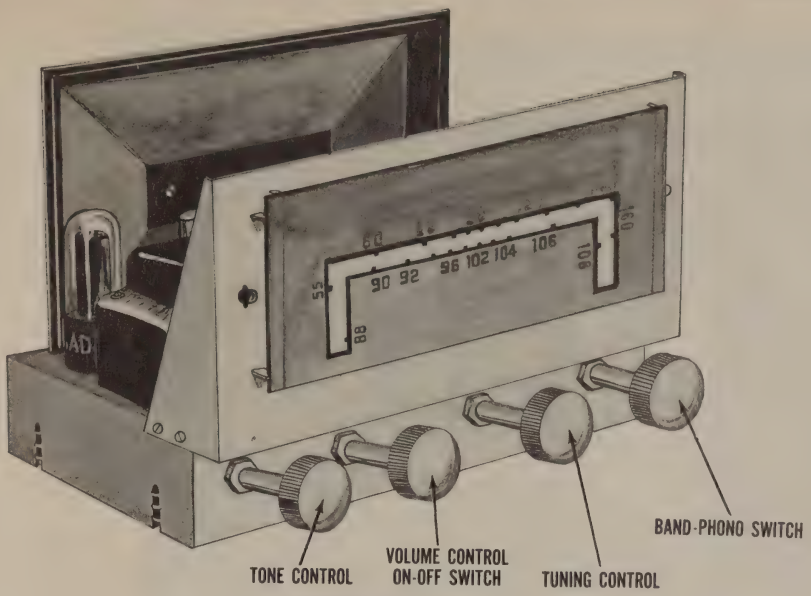
THE COOPERATION OF THE MANUFACTURER OF THIS EQUIPMENT MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

© Howard W. Sams & Co., Inc. 1951

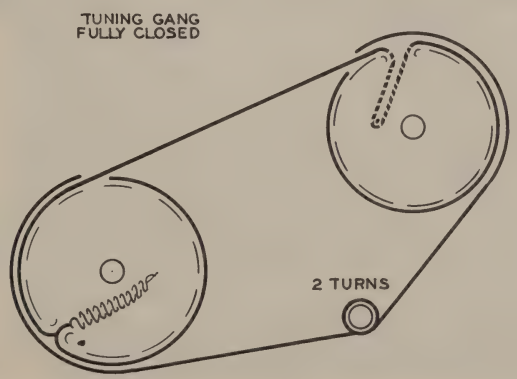
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

MEISSNER
MODEL 9AJ



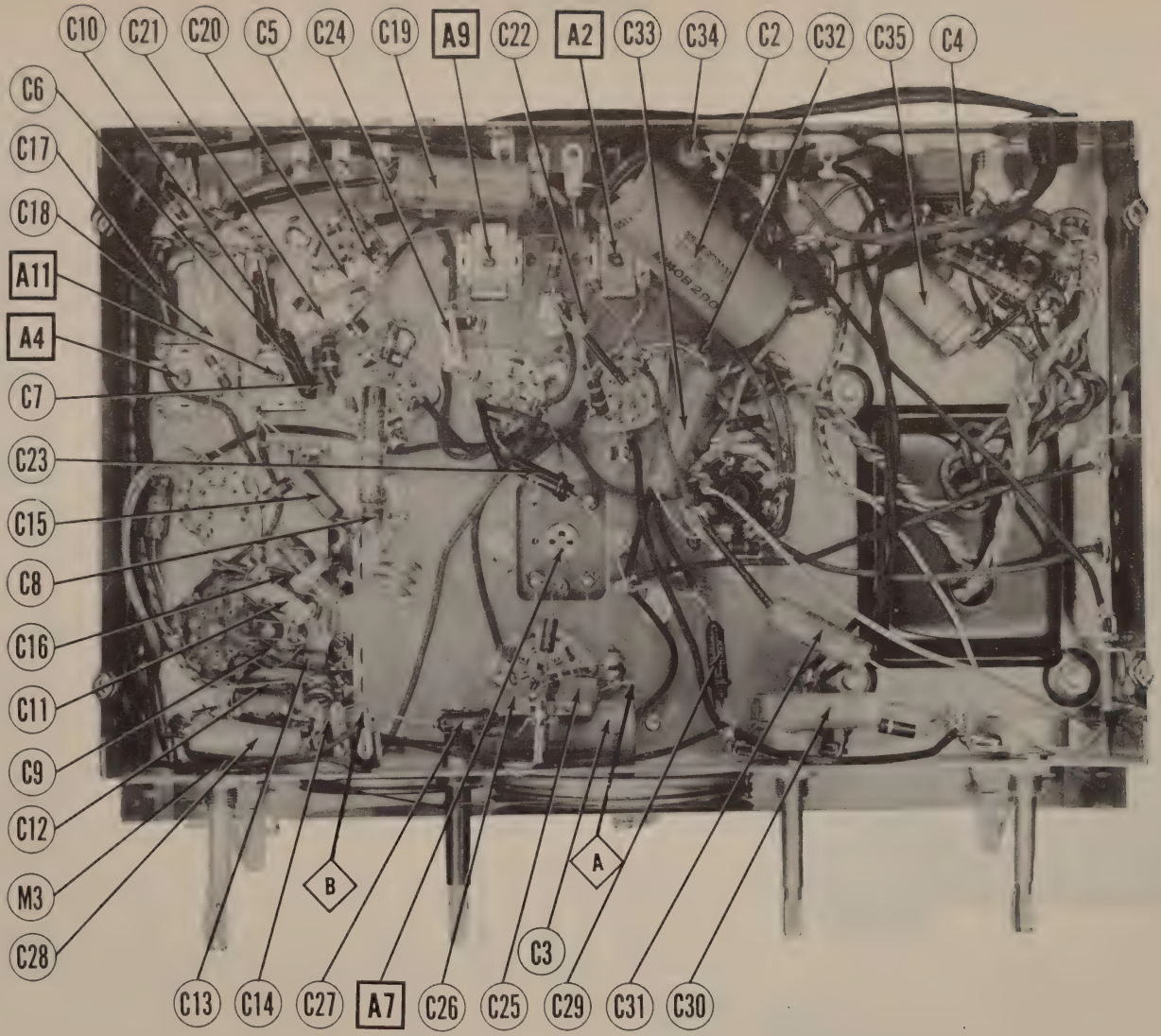
MEISSNER MODEL 9AJ

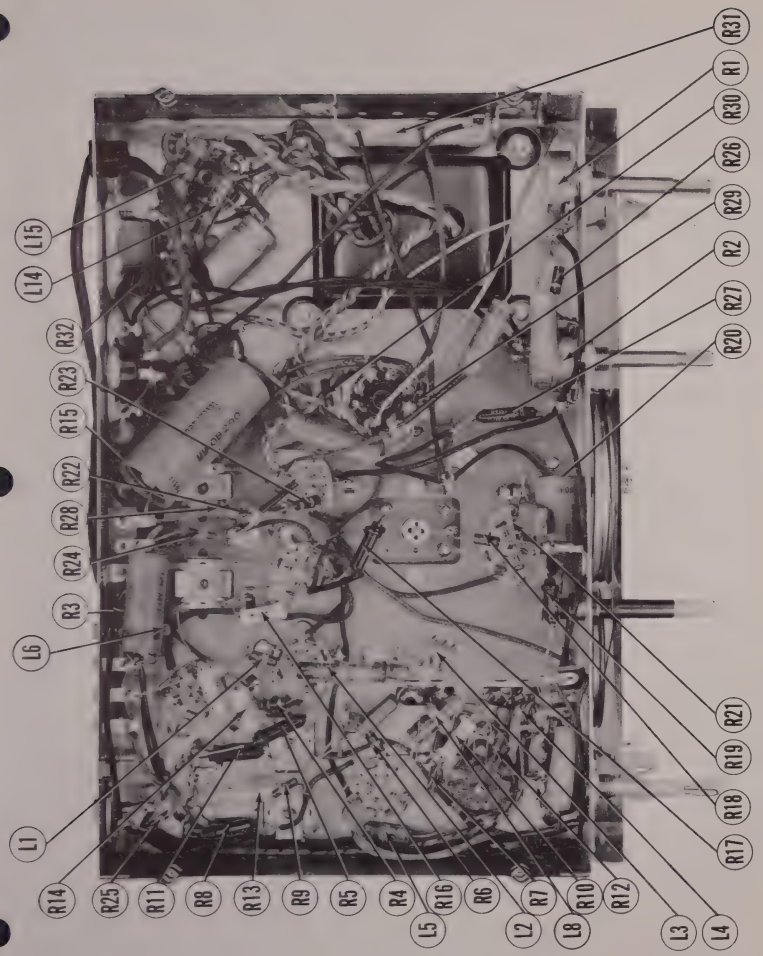
TRADE NAME	Meissner, Model 9AJ		
MANUFACTURER	Meissner Mfg. Div., Maguire Industries, Mt. Carmel, Illinois		
TYPE SET	AC Operated AM-FM Superheterodyne Tuner for Custom Installation		
TUBES (NINE)	Types 6BA6 FM RF Amp., 12AT7 FM Converter, 6BE6 AM Converter, 6BA6 1st IF Amp., 6BA6 2nd FM IF Amp., 6AL5 Ratio Det., 6AT6 DET-AVC-AF, 6V6GT Power Output, 5Y3GT Rectifier		
POWER SUPPLY	110-120 Volts AC	RATING	.54 Amp. at 117 Volts AC
TUNING RANGE-BROADCAST	535-1620KC	FREQ. MOD.	88-108MC

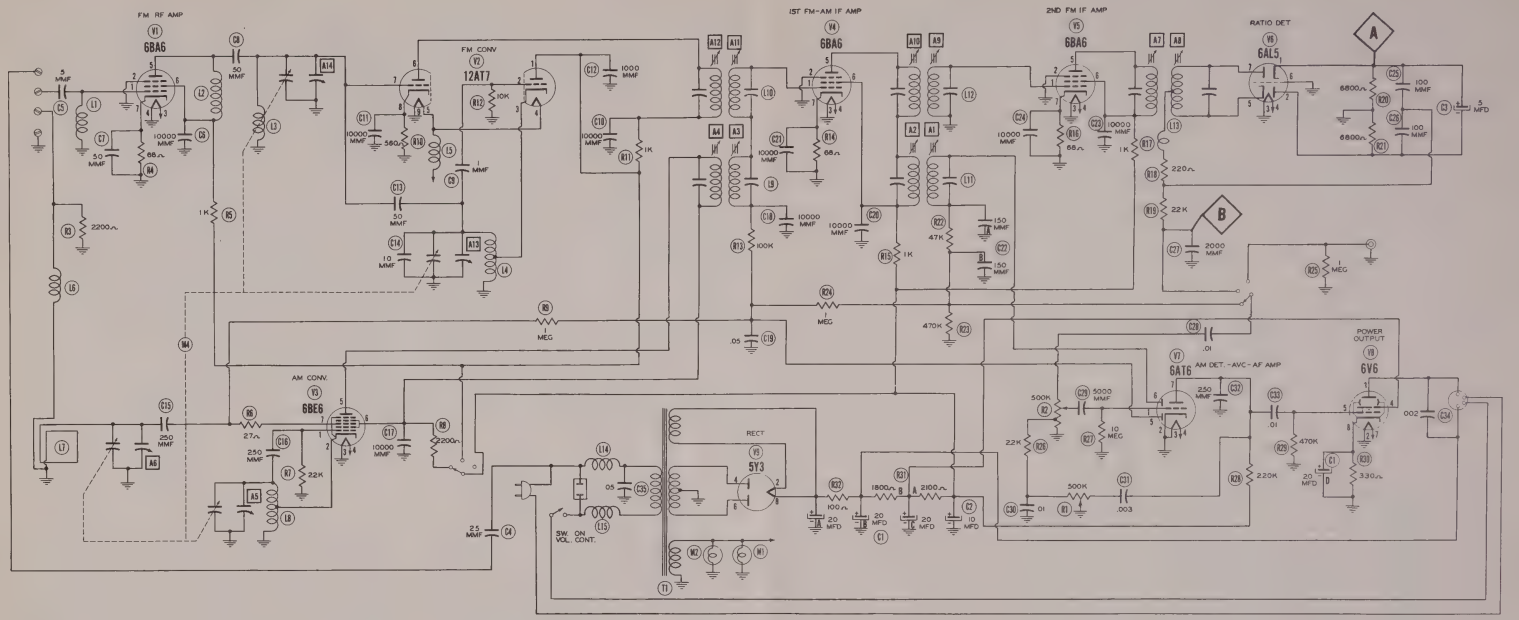


DIAL CORD DRIVE

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed."
"Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1951 by Howard W. Sams & Co., Inc., Indianapolis, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America


C10
C21
C20
C5
C24
C19
A9
C22
A2
C33
C34
C2
C32
C35
C4
C6
C17
C18
A11
A4
C7
C23
C15
C8
C16
C11
C9
C12
M3
C28
B
A
C3
C13
C14
C27
A7
C26
C25
C29
C31
C30





IF=455 KC AM

IF=10.7 MC FM

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BA6	0V	0V	0V	6.3VAC	+85VDC ±1V	+85VDC ±0V	+115VDC ±1V		
V 2	12AT7	+100VDC ±3V	+6-1VDC	0V	6.3VAC	6.3VAC	+100VDC ±3V	0V	+1.4VDC ±1V	0V
V 3	6BE6	+3-8.5VDC	0V	0V	6.3VAC	+55VDC +90VDC	+55VDC +90VDC	-.1VDC +.1VDC		
V 4	6BA6	-.5VDC	0V	0V	6.3VAC	+105VDC +85VDC	+105VDC +85VDC	+.6VDC +.1VDC		
V 5	6BA6	0V	0V	0V	6.3VAC	+105VDC	+105VDC	+.1VDC		
V 6	6AL5	.5VDC	-.5VDC	0V	6.3VAC	0V	0V	0V		
V 7	6AT6	-.7VDC	0V	0V	6.3VAC	-.6VDC	-.6VDC	+150VDC +55VDC		
V 8	6V6GT	0V	0V	260VDC	185VDC	0V	+250VDC	6.3VAC	13VDC	
V 9	5Y3GT	0V	285VDC	117VAC	285VDC	4VAC	285VDC	0V	285VDC	

‡ TAKEN WITH VACUUM TUBE VOLTMETER

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BA6	2Ω	0Ω	0Ω	1Ω	†190KΩ ±†1MΩ	†190KΩ ±†1MΩ	68Ω		
V 2	12AT7	†140KΩ ±†1MΩ	10KΩ	0Ω	1.3Ω	1.3Ω	†190KΩ ±†1MΩ	0Ω	580Ω	0Ω
V 3	6BE6	22KΩ	2Ω	0Ω	1Ω	†170KΩ	†170KΩ	2.5 Meg.		
V 4	6BA6	1.6 Meg.	0Ω	0Ω	1Ω	†180Ω	†180Ω	680Ω		
V 5	6BA6	8Ω	0Ω	0Ω	1Ω	†58Ω	†58Ω	680Ω		
V 6	6AL5	8.8KΩ	6.8KΩ	0Ω	1Ω	Inf.	Inf.	Inf.		
V 7	6AT6	10 Meg.	0Ω	0Ω	1Ω	1.5 Meg.	510KΩ	1225KΩ		
V 8	6V6GT	0Ω	0Ω	†200Ω	†1.9KΩ	†70KΩ	1235KΩ	1Ω	330Ω	
V 9	5Y3GT	Inf.	65KΩ	Inf.	80Ω	Inf.	80Ω	Inf.	45KΩ	

† TAKEN IN FM POSITION
▲ TAKEN IN AM POSITION
† MEASURED FROM PIN 8 OF V8

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

1. **DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.**
2. **Socket connections are shown as bottom views.**
3. **Measured values are from socket pin to common negative.**
4. **Line voltage maintained at 117 volts for voltage readings.**
5. **Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.**
6. **Volume control at maximum, no signal applied for voltage measurements.**

A PHOTOFACT STANDARD NOTATION SCHEMATIC

©Howard W. Sams & Co., Inc. 1951

FIG. 1

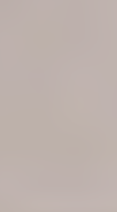


FIG. 2

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Loop should be maintained in same relation position to chassis as when receiver is in cabinet. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	1	2	3	4	5	6	7
	DUMMY ANTENNA	SIGNAL GENERATOR DIAL SETTING	RADIO DIAL SETTING	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POSITION
RM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM	(.05MFD) High side to pin 1 (Grid) of 6BA6 (V5); Low side to chassis.	Loop	1500KC	Loop	(.05MFD) High side to pin 1 (Grid) of 6BA6 (V5); Low side to chassis.	455KC	AM
	"	"	1400KC	"	"	"	"
	"	"	"	"	"	1.7MC (Image)	"
	"	"	"	"	"	10.7MC (Dimond.)	FM
	"	"	"	"	"	"	"
	"	"	"	"	"	"	"
RM RF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM	(.05MFD) High side to pin 7 (Grid) of 6BA6 (V4); Low side to chassis.	"	"	"	"	"	"
	"	"	"	"	"	"	"
	"	"	"	"	"	"	"
	"

PHOTOFACT* Folder

PACKARD-BELL MODELS
2101, 2102, 2105, A; 2202, 2204, 2602

IMPORTANT FILING NOTICE

The contents for this envelope will be found among the last folders in this complete set of folders . . . *unless* it has been purchased as part of a *complete* volume of PHOTOFACTS assembled in a DeLuxe Binder.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.

MODEL 2204-TV

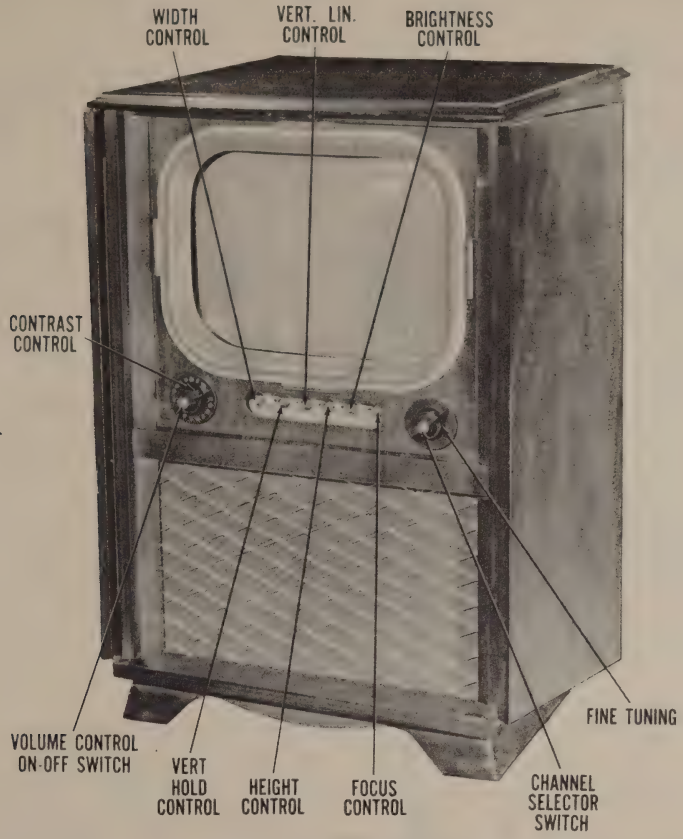
PACKARD-BELL MODELS
2101, 2102, 2105, A; 2202, 2204, 2602

HOWARD W. SAMS & CO., INC. • Indianapolis, Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1951 by Howard W. Sams & Co., Inc., Indianapolis, Indiana, U.S.A. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc."
Printed in U. S. of America

Date 1/51 Set No. 123—Folder No. 10

PACKARD-BELL MODELS
2101, 2102, 2105, A, 2202, 2204, 2602



PACKARD-BELL MODELS
2101, 2102, 2105, A, 2202, 2204, 2602

PACKARD - BELL MODEL 2204 - TV

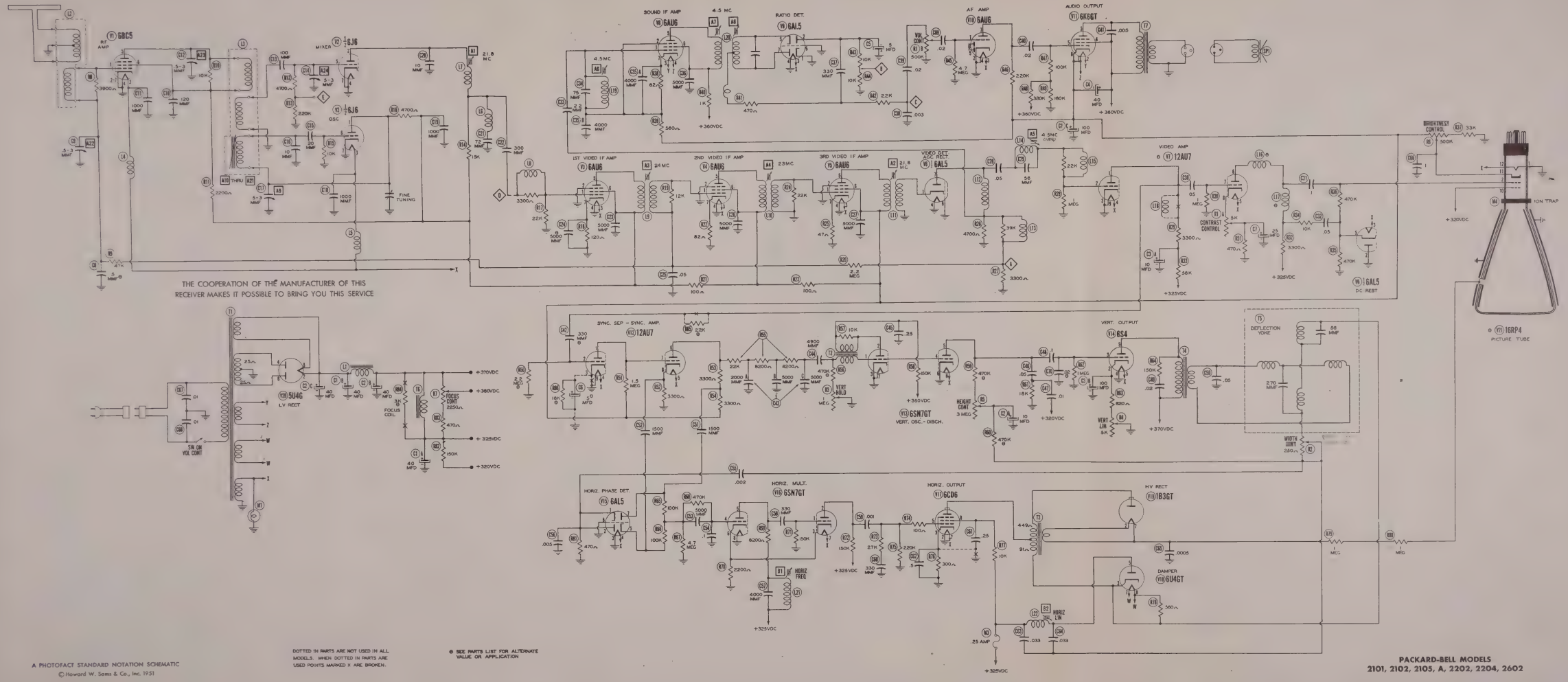
TRADE NAME	Packard - Bell Models 2101-TV, 2102-TV, 2105-TV, 2105A-TV, 2202-TV, 2204-TV, 2602-TV
MANUFACTURER	Packard - Bell Company, 12333 W. Olympic Blvd., Los Angeles, Calif.
TYPE SET	Television Receiver
TUBES	Twenty-One
POWER SUPPLY	110-120 Volts AC-60 Cycle
RATING	1.8 Amp. @ 117 Volts AC
TUNING RANGE—	Channels 2 thru 13

INDEX

Alignment Instructions 6, 7
Disassembly Instructions 11
Horizontal Sweep Circuit Adjustments 11
Parts List And Description 12, 13, 14
Photographs
Cabinet - Rear View 11
Capacitor And Alignment Identifications..... 4, 9
Photographs (Continued)
Chassis - Top View..... 3
RF Tuner..... 10
Resistor And Inductor Identifications..... 15, 16
Schematic 2
Tube Placement Chart..... 5
Voltage And Resistance Measurements..... 8

HOWARD W. SAMS & CO., INC. • Indianapolis 1, Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed."
"Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1951 by Howard W. Sams & Co., Inc., Indianapolis, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America



THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

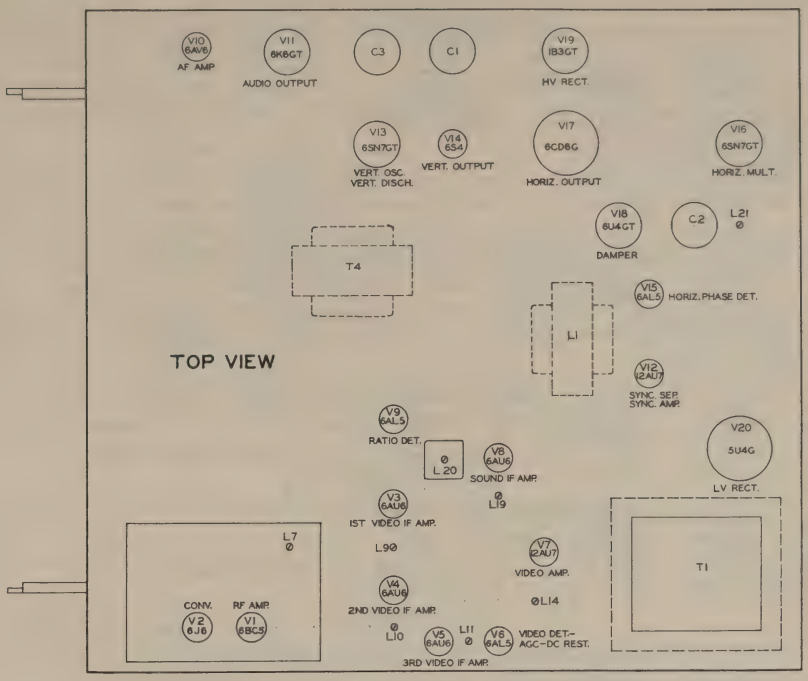
© Howard W. Sams & Co., Inc. 1951

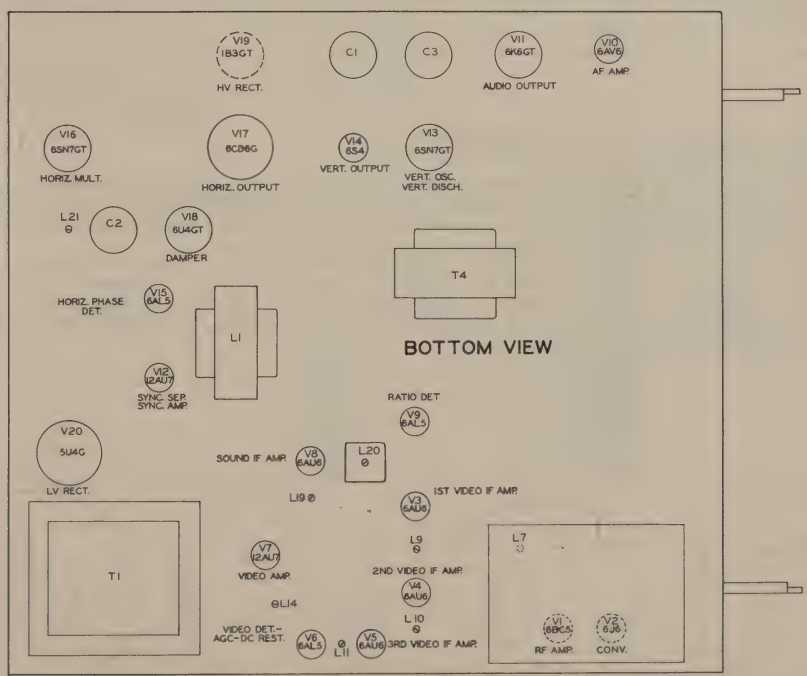
DOTTED IN PARTS ARE NOT USED IN ALL MODELS. WHEN DOTTED IN PARTS ARE USED POINTS MARKED X ARE BROKEN.

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

PACKARD-BELL MODELS
2101, 2102, 2105, A, 2202, 2204, 2602

PACKARD-BELL MODELS
2101, 2102, 2105, A, 2202, 2204, 2602





TUBE PLACEMENT CHART

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage shock hazard may be eliminated by removing the horizontal oscillator tube (V16) from its socket.

VIDEO IF ALIGNMENT

Remove the converter tube (V2) and replace it with a 6J6 which has pin 1 removed. This will disable the local oscillator and prevent the possibility of erroneous indications.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over dummy converter tube (V2). Low side to chassis.	21.8MC (Unmod.)	Any	DC probe to point (A). Low side to chassis.	A1, A2	Adjust for maximum deflection.
2.	"	"	24MC	"	"	A3	"
3.	"	"	23MC	"	"	A4	"

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
4.	Direct	High side to an ungrounded tube shield floating over dummy converter tube (V2). Low side to chassis.	23MC (10MC SWP)	20.5MC 21.8MC 25MC	Any	Vert. amp. to point (A). Low side to chassis.		Check for response curve similar to fig. 1. If set is to be operated in a "fringe area" retouch A1 thru A4 for response similar to figure 1A.

4.5MC TRAP ADJUSTMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
5.	.01MFD	High side to point A. Low side to chassis.	4.5MC (Unmod.)	Any	DC probe thru RF probe to pin 2 (grid) of picture tube. Common to chassis.	A5	Adjust for MINIMUM deflection.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
6.	.01MFD	High side to point A. Low side to chassis.	4.5MC (Unmod.)	Any	DC probe to point (B). Common to chassis.	A6, A7	Adjust for maximum deflection.
7.	"	"	"	"	DC probe to point (C). Common to point (B).	A8	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60 ∿ modulation and 450KC sweep. Use 120 ∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
6.	.01MFD	High side to point A. Low side to chassis.	4.5MC (Unmod.)	4.5MC	Any	Vert. amp. to point (B). Low side to chassis.	A6, A7	Disconnect stabilizer capacitor C5. Adjust for maximum amplitude and symmetry as per figure 2.
7.	"	"	"	"	"	Vert. amp. to point (C). Low side to chassis.	A8	Reconnect capacitor C5. Adjust A8 so 4.5MC occurs at center of crossover lines as per figure 3. SLIGHTLY retouch A7 for maximum amplitude and straightness of crossover lines.

OSCILLATOR ALIGNMENT

Remove the dummy converter tube and replace the original 6J6 in its socket.

Complete oscillator alignment may not be necessary.

If the oscillator seems to be off frequency a similar amount for a majority of the channels, it may be possible to correct them in one step using A9. It should be noted that this is an all channel oscillator circuit adjustment and should not be adjusted for any individual channel. If adjustment of A9 will not bring all channels within the range of the fine tuning control it will be necessary to adjust the channel strip adjustment for each channel that is off frequency. The channel strip adjustments are reached through a hole just to the right of the channel switch shaft. The correct adjustment screw is accessible through this hole as the channel switch is turned to each channel.

The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
8.	Direct	High side to an ungrounded tube shield floating over converter tube (V2). Low side to chassis.	236.25MC (Unmod.)	13	Vert. amp. to point (D). Low side to chassis.	A10	Adjust for zero beat indication on scope. This will be indicated by a narrow trace between two wide ones.
			230.25MC	12		A11	
			224.25MC	11		A12	
			218.25MC	10		A13	
			212.25MC	9		A14	
			206.25MC	8		A15	
			200.25MC	7		A16	
			108.25MC	6		A17	
			102.25MC	5		A18	
			92.25MC	4		A19	
			84.25MC	3		A20	
			78.25MC	2		A21	

FIG. 1

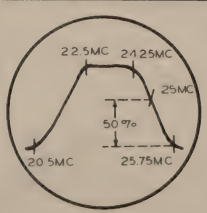


FIG. 1A

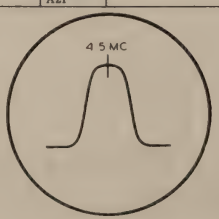


FIG. 2

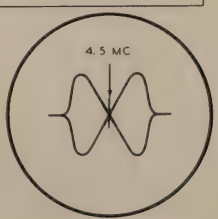


FIG. 3

ALIGNMENT INSTRUCTIONS (CONT.)

RF AND MIXER ALIGNMENT

The sweep generator output lead should be terminated with its characterisitic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8.	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	207MC (10MC SWP)	205.25MC 209.75MC	12	Vert. amp. thru 10KΩ to point (E). Low side to chassis.	A22, A23 A24	Adjust for response curve similar to fig. 4. with markers above 90%.
9.	"	"	213MC (10MC SWP)	211.25MC 215.75MC	13	"		Check all channels for response similar to figure 4. If markers fall below 70% on any channel, make slight adjustment of A22, A23 and A24 with channel switch set for that channel. Recheck all channels to see that they have not been seriously effected.
			201MC (10MC SWP)	199.25MC 203.75MC	11			
			195MC (10MC SWP)	193.25MC 197.75MC	10			
			189MC (10MC SWP)	187.25MC 191.75MC	9			
			183MC (10MC SWP)	181.25MC 185.75MC	8			
			177MC (10MC SWP)	175.25MC 179.75MC	7			
			85MC (10MC SWP)	83.25MC 87.75MC	6			
			79MC (10MC SWP)	77.25MC 81.75MC	5			
			69MC (10MC SWP)	67.25MC 71.75MC	4			
			63MC (10MC SWP)	61.25MC 65.75MC	3			
			57MC (10MC SWP)	55.25MC 59.75MC	2			

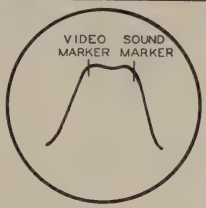


FIG. 4

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BC5	-.7VDC	0V	6.3 VAC	0V	95VDC	95VDC	0V		
V 2	6J6	90VDC	75VDC	6.3VAC	0V	-2.7VDC	§-6.8VDC	0V		
V 3	6AU6	-.4VDC	0V	6.3VAC	0V	125VDC	125VDC	1VDC		
V 4	6AU6	-.3VDC	0V	6.3VAC	0V	125VDC	125VDC	.5VDC		
V 5	6AU6	0V	0V	6.3VAC	0V	130VDC	130VDC	.8VDC		
V 6	6AL5	0V	0V	6.3VAC	0V	2.7VDC	0V	-.4VDC		
V 7	12AU7	60VDC	-.9VDC	0V	6.3VAC	6.3VAC	320VDC	0V	16VDC	0V
V 8	6AU6	#11VDC	#11VDC	#6.3VAC	#0V	#210VDC	#210VDC	#13VDC		
V 9	6AL5	0V	-1VDC	6.3VAC	0V	-.7VDC	0V	-.7VDC		
V 10	6AV6	-.6VDC	0V	6.3VAC	0V	0V	0V	55VDC		
V 11	6K6GT	0V	#6.3VAC	#205VDC	#225VDC	#-14VDC	#-14VDC	#0V	#0V	
V 12	12AU7	18VDC	-3.3VDC	0V	6.3VAC	6.3VAC	90VDC	18VDC	20VDC	0V
V 13	6SN7GT	-75VDC -105VDC	250VDC	0V	-75VDC -105VDC	275VDC 90VDC	0V	0V	6.3VAC	
V 14	6S4	0V	30VDC 15VDC	0V	0V	6.3VAC	0V	0V	0V	375VDC
V 15	6AL5	0V	0V	0V	6.3VAC	7.8VDC	0V	-7.8VDC		
V 16	6SN7GT	-4.7VDC	190VDC	14VDC	.4VDC	295VDC	14VDC	6.3VAC	0V	
V 17	6CD6G	0V	0V	38VDC	0V	.2VDC	0V	6.3VAC	170VDC	TOP CAP *
V 18	6U4GT	0V	0V	630VDC	0V	330VDC	0V	¶	¶	
V 19	1B3GT	* DO NOT MEASURE								
V 20	5U4G	0V	385VDC	0V	380VAC	0V	380VAC	0V	385VDC	
V 21	16RP4	0V	.4VDC	PIN 10 320VDC	PIN 130VDC	11 8VDC	PIN 12 6.3VAC			

FOCUS CONTROL COUNTER CLOCKWISE
§ TAKEN WITH VACUUM TUBE VOLTMETER
¶ 6.3VAC MEASURED ACROSS FILAMENT
* DO NOT MEASURE
# MEASURED FROM PIN 8 OF V11

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BC5	2.2Meg	0Ω	.1Ω	0Ω	#2.4KΩ	#2.4KΩ	0Ω		
V 2	6J6	#4.9KΩ	#15KΩ	.1Ω	0Ω	225KΩ	10KΩ	0Ω		
V 3	6AU6	22KΩ	0Ω	.1Ω	0Ω	#200Ω	#200Ω	120Ω		
V 4	6AU6	2.2Meg	0Ω	.1Ω	0Ω	#100Ω	#100Ω	82Ω		
V 5	6AU6	.3Ω	0Ω	.1Ω	0Ω	#.4Ω	#0Ω	47Ω		
V 6	6AL5	.4Ω	0Ω	.1Ω	0Ω	470KΩ	0Ω	2KΩ		
V 7	12AU7	†60KΩ	1Meg	0Ω	.1Ω	.1Ω	†3.6KΩ	1Meg	5.5KΩ	0Ω
V 8	6AU6	#560Ω	#560Ω	#.1Ω	#0Ω	†1KΩ	†1KΩ	#640Ω		
V 9	6AL5	0Ω	20KΩ	.1Ω	0Ω	Inf.	0Ω	Inf.		
V 10	6AV6	4.7Meg	0Ω	.1Ω	0Ω	Inf.	Inf.	#220KΩ		
V 11	6K6GT	.5Ω	#.1Ω	†620Ω	†37Ω	225KΩ	130KΩ	#0Ω	140KΩ	
V 12	12AU7	#1.5Meg	2.2Meg	0Ω	.1Ω	.1Ω	#6.6KΩ	#1.5Meg	3.3KΩ	0Ω
V 13	6SN7GT	470KΩ 1.5Meg	†150KΩ	0Ω	470KΩ 1.5Meg	▲ 950KΩ ▲ 4Meg	0Ω	0Ω	.1Ω	
V 14	6S4	Inf.	5.8KΩ 820Ω	1Meg	0Ω	.1Ω	1Meg	Inf.	Inf.	†825Ω
V 15	6AL5	470Ω	470Ω	0Ω	.1Ω	4.8Meg	0Ω	4.8Meg		
V 16	6SN7GT	150KΩ	†150KΩ	2.2KΩ	5Meg	†8.6KΩ	2.2KΩ	.1Ω	0Ω	
V 17	6CD6G	Inf.	0Ω	300Ω	Inf.	220KΩ	Inf.	.1Ω	†10KΩ	TOP CAP ▲ 91Ω
V 18	6U4GT	Inf.	Inf.	750KΩ	Inf.	†380Ω	Inf.	▲560Ω	▲560Ω	
V 19	1B3GT	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	TOP CAP ▲540Ω
V 20	5U4G	Inf.	50KΩ	Inf.	25Ω	Inf.	25Ω	Inf.	50KΩ	
V 21	16RP4	0Ω	940KΩ	PIN 10 †150KΩ	PIN 190KΩ	11 33KΩ	PIN 12 .1Ω			

FOCUS CONTROL COUNTERCLOCKWISE
MEASURED FROM PIN 8 OF V11
† MEASURED FROM PIN 2 OF V20
▲ MEASURED FROM PIN 3 OF V18

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1,000 ohms.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panels controls set at minimum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.

PARTS LIST AND DESCRIPTIONS (Continued)

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ~)	Packard Bell PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
L1	.320A	37Ω	1 Henry	27005	C-2326	C-2991	TR3300	

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	Packard Bell PART No.	MEISSNER PART No.	
L2	Ant. Coil	0Ω	0Ω	*		
L3	RF Mixer Grid and Osc. Coils	0Ω		*		
L4	Fil. Choke	0Ω		*		
L5	Fil. Choke	0Ω		*		
L6	IF Trap	.6Ω		*		
L7	1st Video IF	.6Ω		*		
L8	1st Video IF Coupling	1Ω		29523		Wound on 3.3KΩ Resistor
L9	2nd Video IF	.3Ω	.3Ω	29055		
L10	3rd Video IF	.3Ω	.3Ω	29055		
L11	4th Video IF	.4Ω	.4Ω	29056		
L12	Peaking	4.5Ω		29520		36 Microhenries Black Dot
L13	Peaking	9.5Ω		29508	19-1921 ⊕	180 Microhenries White Dot Wound On 39KΩ Resistor
L14	4.5MC Trap	1.4Ω		29529		
L15	Peaking	7.8Ω		29506	19-1921 ◐	120 Microhenries Blue Dot Wound On 22KΩ Resistor
L16A	Peaking	6.5Ω		29507	19-1920	93 Microhenries Red Dot
B	Peaking				19-1921	120Microhenries Used In Models 2101, 2102, 2105, 2105A With Serial Number After 75696
L17A	Peaking	4Ω		29520		36 Microhenries Black Dot
B	Peaking				19-1920	96 Microhenries Used In Models 2101, 2102, 2105, 2105A Serial Number After 75696
L18	Peaking			29509	19-1922	250 Microhenries Green Dot Models 2101, 2102, 2105, 2105A 2602
L19	Sound IF	1.1Ω		29053		
L20	Ratio Det. Trans.	5Ω	.3Ω	29054		
L21	Hor. Freq.	100Ω		29527		Used As Horizontal Hold Control
L22	Hor. Lin.	30Ω		29504		

* Part Of Tuner Part No. 10528
⊕ Parallel With 39KΩ Resistor
◐ Parallel With 22KΩ Resistor

DIAL LIGHTS

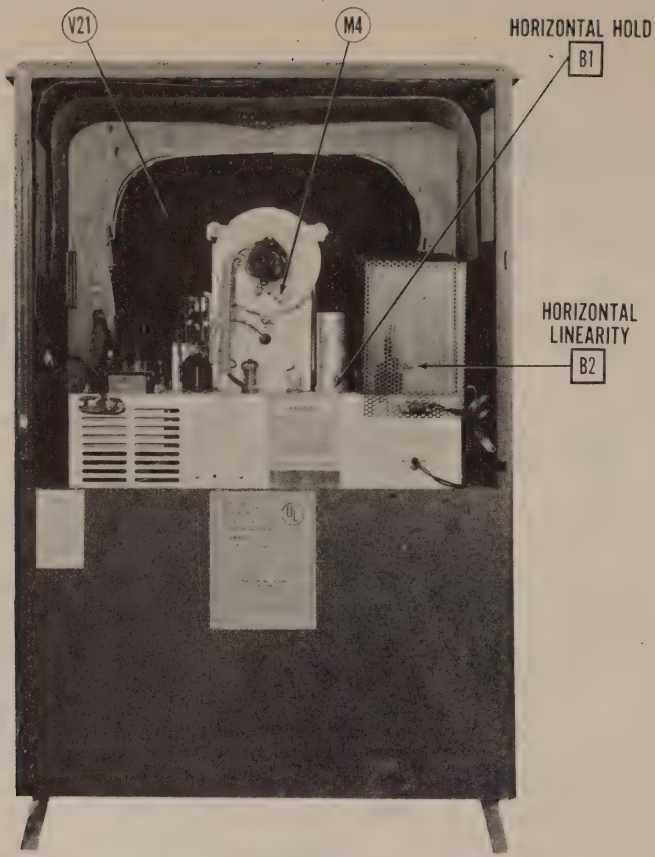
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					Packard Bell PART No.		
M1	Bayonet	6-8	.15	Brown	54002		Type #47

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA				REMARKS
			PACKARD BELL PART No.		LITTLE FUSE PART No.		
			FUSE	HOLDER	FUSE	HOLDER	
M3	3AG	.25A	45004		318.250		

MISCELLANEOUS

ITEM No.	PART NAME	PACKARD BELL PART No.	NOTES
M2	RF Tuner	10528	
M4	Ion Trap	28049	
	Safety Glass	55026-2	Models 2102, 2105, 2602, 2101
	Safety Glass	55028-2	Model 2105A
	Safety Glass	55022	Models 2202, 2204
	Knob	52067-1	Channel Selector
	Knob	52068	Fine Tuning
	Knob	52069-1	Volume
	Knob	52070	Contrast



CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV Station, preferably a test pattern.

Turn the horizontal hold slug (B1) until the picture synchronizes horizontally.

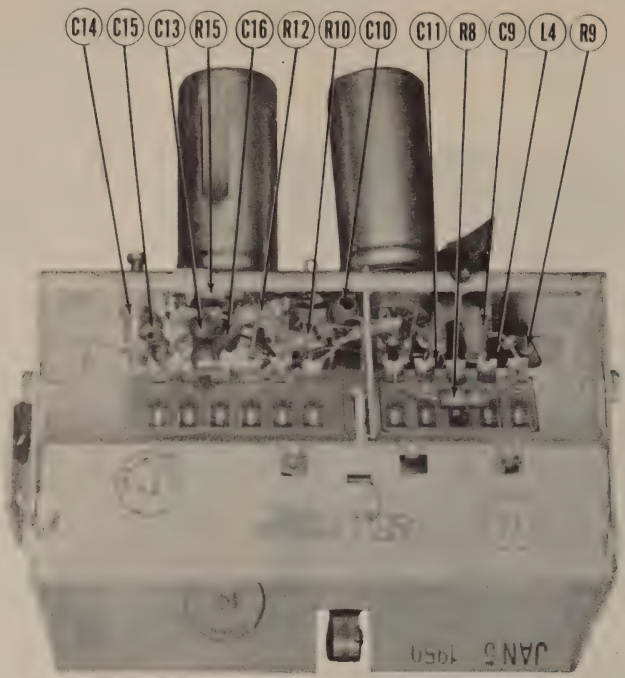
Adjust the width control until the picture fills the mask horizontally.

Adjust the horizontal linearity slug (B2) until the picture is symmetrical from left to right.

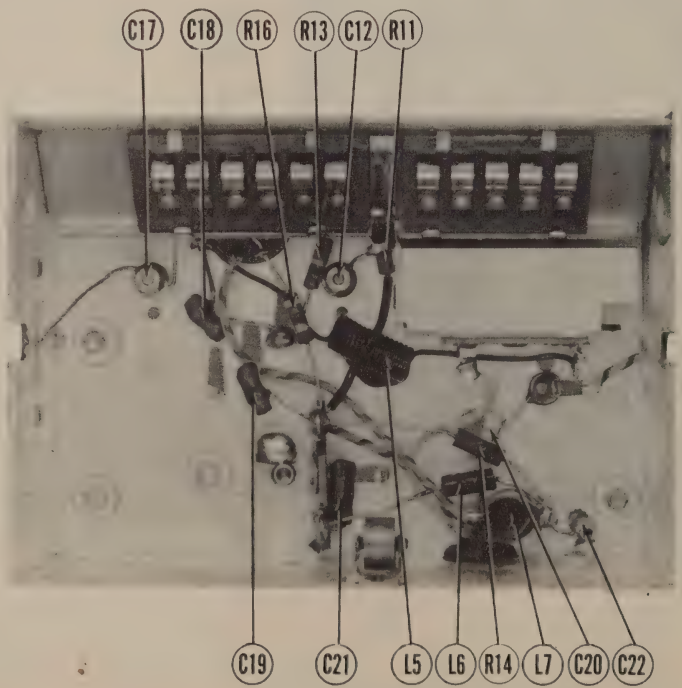
DISASSEMBLY INSTRUCTIONS

1. Remove four push-on type control knobs.
2. Remove nineteen phillips head wood screws from both sections of rear cover. Remove rear cover.
3. Disconnect built-in antenna.
4. Disconnect speaker leads.
5. Remove four 7/16" hex head bolts from chassis. Remove chassis.
6. Remove four phillips head screws from speaker. Remove speaker.

NOTE: FOR PICTURE TUBE REMOVAL IT IS NECESSARY TO REMOVE CHASSIS AS OUTLINED ABOVE.



RF TUNER-RIGHT SIDE



RF TUNER-BOTTOM VIEW

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: PACKARD BELL PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	RF Amp.		6BC5	7BD	
V2	Converter		6J6	7BF	
V3	1st Video IF Amp.		6AU6	7BK	
V4	2nd Video IF Amp.		6AU6	7BK	
V5	3rd Video IF Amp.		6AU6	7BK	
V6	Video Det.-AGC-DC Restorer		6AL5	6BT	
V7A	Video Amp.		12AU7	9A	
B	Video Amp.		6SN7GT	8BD	
V8	Sound IF Amp.		6AU6	7BK	
V9	Ratio Det.		6AL5	6BT	
V10	AF Amp.		6AV6	7BT	
V11	Audio Output		6K8GT	7S	
V12	Sync. Sep.-Sync. Amp.		12AU7	9A	
V13	Vert. Osc.-Disch.		6SN7GT	8BD	
V14	Vert. Output		6S4	9AC	
V15	Hor. Phase Det.		6AL5	6BT	
V16	Horiz. Mult.		6SN7GT	8BD	
V17	Horiz. Output		6CD6G	5BT	
V18	Damper		6U4G	4CG	
V19	H.V. Rectifier		1B3GT	5C	
V20	L.V. Rectifier		5U4G	5T	
V21A	Picture Tube		16BP4	12D	
B	Picture Tube		16TP4	12D	
C	Picture Tube		16KP4	12D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: PACKARD BELL PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	450		AF88J20E		UPT4450-1020		TVL-3764	▲ Filter ■ Filter
B	40	450							▲ Filter
C	100	200							▲ Filter
C2A	10	500		AF2K88J		UPT44145		TVL-2764 TVA-1902	▲ Vert. Disch. Dec. ■ Filter ▲ Filter
B	40	450							
C	40	450							
C3A	10	450		AFH62J		UPT204		TVL-2810	▲ V. Amp. Dec. ▲ Vert. Output Cath.
B	100	50							
C4	40	350		PRS450/40		BR4035A		TVA-1611	Decoupling
C5	15	50		PRS150/4		BR550		TVA-1303	Stabilizing Cap.
C6	15	50		PRS150/4		BR-550		TVA-1303	Sync. Amp. Cath. *
C7	25	25		PRS25/25		BR252A		TVA-1205	V. Amp. Cathode †
C8	5			SI5NPO	TCZ-4.7		NP0K-5		Variable Trimmer †
C9	.5-3				829-3				RF Amp. Dec.
C10	120			SLI20	D5-121		GP2K-120	19C29	RF Amp. Dec.
C11	1000			SLIK01	D5-102		GP2L-001	19C1	RF Amp. Fil.
C12	1.5-3				829-3				Variable Trimmer
C13	100			SLI00N750	TCN-100		N750L-100	29C16	RF Coupling
C14	1.5-3				829-3				Variable Trimmer
C15	20			SI20NPO	TCZ-20		NP0K-20		Osc. Grid Cap
C16	10			SLI0N750	TCN-10		N750K-10	19C4	Fixed Trimmer
C17	1.5-3				829-3				Variable Trimmer
C18	1000			SLI000	D5-102		GP2L-001	19C1	Osc. Fil. Bypass
C19	1000			SLI000	D5-102		GP2L-001	19C1	RF Bypass
C20	10			SLI0NPO	TCZ-10		NP0K-10	19C3	Fixed Trimmer
C21	72	500					NP0M-72		Fixed Trimmer
C22	500			SLI501	D6-301		GP2K-300	19C14	Osc. Coupling
C23	5000		23931	BPD-005	DD-502	UD5D5	81L-005	29C1	1st V. IF Dec.
C24	5000		23931	BPD-005	DD-502	UD5D5	81L-005	29C1	1st V. IF Cath. †
C25	.05	200	23017	P288-05	DF-503	PTE4S5		2TM-S5	AGC Filter
C26	5000		23931	BPD-005	DD-502	UD5D5	81L-005	29C1	2nd V. IF Dec.
C27	5000		23931	BPD-005	DD-502	UD5D5	81L-005	29C1	3rd V. IF Dec.
C28	.05	200	23017	P288-05	DF-503	PTR4S5		2TM-S5	Video Coupling
C29	56		23922		TCZ-56		NP0M-56		Fixed Trimmer
C30	.05	600	23010	P688-05	DF-503	PTE6S5		6TM-S5	Video Coupling
C31	.1	600	23012	P688-1	DF-104	PTE6P1		6TM-P1	Video Coupling
C32	.05	600	23010	P688-05	DF-503	PTE6S5		6TM-S5	Video Coupling
C33	2.2		23952		TCZ-2.2				S. IF Coupling
C34	75						N150K-75		Fixed Trimmer
C35A	4000		23955	BPD-2K004	DD-2-502	UD5D4	822-22K004	36C2	S. IF Cath.
B	4000					UD5D4			S. IF Cath.
C36	5000		23931	BPD-005	DD-502	UD5D5	81L-005	29C1	S. IF Dec.
C37	330		23944	SI330	D6-331	SW5T3	GP2K-330	19C14	Diode Load Cap.
C38	.002	600	23016	P688-002	D6-302	PTE6D3	GP2M-003	6TM-D3	De-emphasis
C39	.02	600	23007	P688-02	DF-203	PTE6S2		6TM-S2	Audio Coupling
C40	.02	600	23007	P688-02	DF-203	PTE6S2		6TM-S2	Audio Coupling
C41	.005	600	23004	P688-005	D6-502	PTE6D5	81L-005	6TM-D5	Output Plate Bypass
C42	330		23944	SI330	D6-331	SW5T3	GP2K-330	19C14	Sync. Coupling ‡
C43A	2000		+23951	P688-005		PTE6D2	GP2M-002	6TM-D2	Integrator Net
B	5000			P688-005	+PC-100	PTE6D5	81L-005	6TM-D5	Integrator Net.
C	5000			P688-005		PTE6D5	81L-005	6TM-D5	Integrator Net
C44	4900	500	23207	1467-005	D6-472	UD5D5	81L-005	1FM-25	Vert. Osc. Grid
C45	.25	400	23013	P488-25				GT4P25	Vert. Osc. Dec.
C46	.05	600	23010	P688-05		PTE6S5		6TM-S5	Vert. Discharge
C47	.01	600	23939	P688-01	D6-103	PTE6S1	821-01	6TM-S1	Vert. Sweep Coupling
C48	.1	600	23002	P688-1	DF-104	PTE6P1		6TM-P1	Vert. Sweep Coupling
C49	.02	600	23007	P688-02	DF-203	PTE6S2		6TM-S2	Fixed Trimmer
C50	.05	600	23010	P688-05	DF-503	PTE6S5		6TM-S5	Fixed Trimmer
C51	1500		23936	SI500	D6-152	1W5D15	GP2L-0015	29C8	Hor. Sync. Coupling
C52	1500		23936	SI500	D6-152	1W5D15	GP2L-0015	29C8	Hor. Sync. Coupling
C53	5000		#	PTE6D5	D6-502	UD5D5		29C1	AFC Filter
C54	1	200	23019	P288-1	DF-104	PTE4P1		2TM-P1	AFC Filter
C55	.002	600	23002	P688-002	D6-202	PTE6D2	GP2M-002	6TM-D2	Horiz. Feedback
C56	.005	600	23004	P688-005	D6-502	PTE6D5	81L-005	6TM-D5	Voltage Divider
C57	4000	500	23206	1464-004		1DR5D4		MS-24	Fixed Trimmer
C58	330	500	23214	SI330	D6-331	SR5T3	GP2K-330	19C14	Hor. MV Feedback

CAPACITORS (CONT.)

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: Packard Bell PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C59	.001	600	23001	P688-001	D6-102	PTE6D1	GP2L-001	6TM-D1	Hor. Sweep Coupling
C60	330		23944	SI330	D6-331	SR5T3	GP2K-330	19C14	Hor. Discharge
C61	.25	400	23013	P488-25		GT4P25		4TM-P25	Hor. Output Screen
C62	.5	200	23035	P288-5		GT2P5		2TM-P5	Hor. Output Cath.
C63	.033	600	23031	P688-033		PTE6S3		6TM-S3	Damper Filter
C64	.033	600	23031	P688-033		PTE6S3		6TM-S3	Damper Filter
C65	.0005	15000	23036	15084-0005					H.V. Filter
C66	.1	200	23019	P288-1		DF-104	PTE4P1		2TM-P1	Pic. Tube Cath.
C67	.01	125VAC	23932	P688-01		D6-103	PTE6S1	821-01	6TM-S1	Line Filter
C68	.01	125VAC	23932	P688-01		D6-103	PTE6S1	821-01	6TM-S1	Line Filter
C69	.02	600	23007	P688-02		DF-203	PTE6S2		6TM-S2	Audio Coupling
C70	.02	600	23007	P688-02		DF-203	PTE6S2		6TM-S2	Vert. Output Grid *

* Used only in models 2101, 2101-2, 2102, 2105, 2105A, and 2602

† Not used in all models

‡ Some models use 10000 MMF in this application. Mfgrs. Part No. 23023

‡ Some models use 1500MMF in this application. Mfgrs Part No. 23936

Items C43A, C43B, C43C, 855A, 855B, and 855C are combined into one unit.

Items C53 and R68 are combined into one unit. Mfgrs Part No. 23960

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: Packard Bell PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	5000Ω	½	25835	Concentrikit			
B	500KΩ			B13-114 *	RTV-212	35BB-627-S	Contrast control -panel
C	Shaft End			B13-133 *			Volume control - rear
D	Swtch			E-302 *			Attach per instructions in "Concentrikit"
R2	250Ω	4	25836	76-1 *	RTV-60	VK-125	Attach per instructions in "Concentrikit"
R3A	1Meg	½	25833	Q11-137	AG-61-S	AN-69	Width control - wire wound
B	Shaft		Not reg.	Not reg.	FK3-1/4	AK-1	Vert. hold control
R4A	500KΩ	½	23807B	Q11-114	AM-19-S	AN-10	Attach to R3A per instructions
B	Shaft		Not reg.	Not reg.	FK3-1/4	AK-1	Vert. linearity control
R5A	1Meg	½	25805D	Q11-140	AM-84-S	AN-84	Attach to R4A per instructions
B	Shaft		Not reg.	Not reg.	FK3-1/4	AK-1	Height control
R6A	500KΩ	½	25832	Q11-133	AG-58-S	AN-59	Attach to R5A per instructions
B	Shaft		Not reg.	Not reg.	FK3-1/4	AK-1	Brightness control
R7	2250Ω	2	25830	WK-3000		SV3-926	Attach to R6A per instructions Focus control - wire wound

* Additional parts to be used in "Concentrikit".

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: Packard Bell PART No.	IRC PART No.	IDENTIFICATION CODES: ALL RESISTORS ± 10% UNLESS OTHERWISE STATED
R8	2900Ω			BTS-3000	Antenna Coil Shunt
R9	47KΩ	20%		BTS-47K	AGC Filter
R10	2Ω				RF Coil Shunt
R11	2200Ω	20%		BTS-2200	RF Amp. Decoup
R12	4700Ω			BTS-4700	Mixer Grid
R13	220KΩ	20%			Mixer Grid
R14	15KΩ	20%			Mixer Plate
R15	10KΩ				Osc. Grid
R16	4700Ω			BTS-4700	Osc. Plate
R17	22KΩ		73041		1st Video IF Amp. Grid
R18	12Ω		73004	BTS-120	1st Video IF Amp. Cathode
R19	12KΩ		73038		1st Video IF Transformer Shunt
R20	2.2Meg		73165	BTS-2.2Meg	AGC Network
R21	100Ω		73015	BTS-100	Decoup
R22	82Ω		73012	BTS-82	2nd Video IF Amp. Cathode
R23	100Ω		73013	BTS-100	Decoup
R24	22KΩ		73041		3rd Video IF Transformer Shunt
R25	47Ω		73009		3rd Video IF Amp. Cathode
R26	4700Ω		73033	BTS-4700	Video Det. Diode Load
R27	3300Ω		73031	BTS-3300	AGC Network
R28	1Meg	20%	73161	BTS-1Meg	Video Amp. Grid
R29	3300Ω		73031	BTS-3300	Video Amp. Plate
R30	1Meg	20%	73161	BTS-1Meg	Video Output Grid
R31	4700Ω		73021	BTS-4700	Video Output Cathode
R32	3300Ω	5% 2	73431	BTB-3300-5%	Video Output Plate - See Note 1
R33	56KΩ	1	73246	BTA-56K	Video Amp. Decoup
R34	10KΩ		73037	BTS-10K	Isolation
R35	470KΩ	20%	73157	BTS-470K	DC Restorer Diode Load
R36	470KΩ	20%	73157	BTS-470K	Picture Tube Grid
R37	33KΩ		73043	BTS-33K	Picture Tube Cathode
R38	82Ω		73012	BTS-82	Sound IF Amp. Cathode
R39	560Ω		73023	BTS-560	Voltage Divider
R40	1000Ω		73025	BTS-1000	Sound IF Amp. Decoup
R41	470Ω		73021	BTS-470	Balancing
R42	22KΩ		73041	BTS-22K	De-empahsis
R43	10KΩ		73037	BTS-10K	Ratio Det. Diode Load
R44	10KΩ		73037	BTS-10K	Ratio Det. Diode Load
R45	4.7Meg	20%	73169	BTS-4.7Meg	AF Amp. Grid
R46	220KΩ	20%	73153	BTS-220K	AF Amp. Plate
R47	100KΩ	20%	73149	BTS-100K	Output Grid
R48	330KΩ	20%	73065	BTS-330K	Voltage Divider
R49	180KΩ		73052	BTS-180K	Voltage Divider
R50	2.2Meg	20%	73165	BTS-2.2Meg	Sync. Sep. Grid - See Note 6
R51	1.5Meg	20%	73163	BTS-1.5Meg	Sync. Sep. Plate
R52	3300Ω		73031	BTS-3300	Sync. Amp. Cathode
R53	3300Ω		73031	BTS-3300	Sync. Amp. Plate
R54	3300Ω		73031	BTS-3300	Sync. Amp. Plate
R55A	22KΩ		† 23951		Integrator
B	8200Ω				Integrator
C	8200Ω				Integrator

RESISTORS (CONT.)

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: Packard Bell PART No.	IRC PART No.	IDENTIFICATION CODES
R56	470KΩ	20% ½	73157	BTS-470K	Voltage Divider - See Note 4
R57	10KΩ	½	73037	BTS-10K	Vert. Osc. Transformer Shunt
R58	150KΩ	20% ½	73151	BTS-150K	Vert. Osc. Plate Decoup
R59	470KΩ	20% ½	73157	BTS-470K	Vert. Disch. Plate - See Note 5
R60	470KΩ	20% ½	73157	BTS-470K	Vert. Disch. Plate Decoup - See Note 4
R61	18KΩ	½	73040	BTS-18K	Vert. Peaking
R62	1Meg	20% ½	73161	BTS-1Meg	Vert. Output Grid
R63	82Ω	½	73224	BTA-820	Vert. Output Cathode
R64	150KΩ	20% ½	73151	BTS-150K	Damping
R65	100KΩ	20% ½	73149	BTS-100K	Horiz. Phase Det. Diode Load
R66	100KΩ	20% ½	73149	BTS-100K	Horiz. Phase Det. Diode Load
R67	4.7Meg	20% ½	73169	BTS-4.7Meg	Horiz. Phase Det. Diode Load
R68	470KΩ	½ †	23960	BTS-470K	Horiz. AFC Filter
R69	8200Ω	½	73036	BTS-8200	Horiz. MV Plate
R70	2200Ω	½	73029	BTS-2200	Horiz. MV Cathode
R71	150KΩ	½	73151	BTS-150K	Horiz. MV Grid
R72	150KΩ	½	73151	BTS-150K	Horiz. MV Plate
R73	27KΩ	½	73042	BTS-27K	Horiz. Peaking
R74	100Ω	½	73013		Parasitic Supp
R75	220KΩ	20% ½	73163	BTS-220K	Horiz. Output Grid
R76	300Ω	10	73615	1 3/4A-300	Horiz. Output Cathode - Wire Wound
R77	10KΩ	5	73642	1 3/4A-10K	Horiz. Output Screen
R78	560Ω	2	73422	BTB-560	Voltage Divider
R79	1Meg	20% 1	73398		H.V. Filter
R80	1Meg	20% 1	73398		H.V. Filter
R81	470Ω	½	73021	BTS-470	Horiz. Feedback Network
R82	150KΩ	½	73151	BTS-150K	Voltage Divider
R83	470Ω	2	73421	BTB-470	Focus Coil Shunt
R84	3000Ω	2			Focus Coil Shunt - See Note 2
R85	22K	½	73041	BTS-22K	Isolation - See Note 3
R86	18K	½	73040	BTS-18K	Sync. Sep. Cathode - See Note 3

Note 1. Some models use resistors in series to obtain desired value.
Note 2. Not used in all models.
Note 3. Not used in models 2202-TV and 2204-TV
Note 4. Some models use 680KΩ resistor in this application
Note 5. Some models use 390KΩ resistor in this application.
Note 6. Models 2101, 2102, 2105, 2105A and 2602 use 4.7meg resistor in this application.
† Items R55A, R55B, R55C, C43A, and C43C are combined into one unit.
† Items R68 and C53 are combined into one unit.

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	REPLACEMENT DATA: PACKARD BELL PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC	720V	89036B			
	① 1.8A	.200ADC	SEC. 2: 5V ② 3A; 6.3V ③ 1.9A			
			SEC. 4: 6.3V ③ 1.2A	SEC. 5: 6.3V ③ 4A		

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING: DC RESISTANCE PRI.	RATING: DC RESISTANCE SEC.	REPLACEMENT DATA: Packard Bell PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	NOTES
T2	230Ω	13Ω	89031	A-8111 ①	A-3000 ①	TBO-1 ①	Vert. Block Osc.
T3	540Ω		89432A				Horiz. Output
	tap@ 95Ω						
T4	790Ω	.5Ω	89431				Vert. Output
T5A	13.5Ω		29533				Horiz. Deflection Coil
B	44Ω						Vert. Deflection Coil
T6	435Ω		29519		MF-2		Focus Coil

① Drill one new mounting hole.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: Packard Bell PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
T7	6.2KΩ	3.8Ω	585Ω	.5Ω	89427	A-3878	A-2931	RO-13	

SPEAKER

ITEM No.	RATINGS: FIELD RES.	RATINGS: V. C. IMP.	REPLACEMENT DATA: Packard Bell PART No.	JENSEN PART No.	OUAM PART No.	NOTES
SP1A	PM	3.8Ω	83705	ST-119	10A4	
B	PM	3.8Ω	83302	Mod. P10-1 ST-110 Mod. P6-V	6A15	
	CONE DIA.	V. C. DIA.				
SP2A	9 3/4"	9/16"				
B	6 1/8"	9/16"				

PARTS LIST AND DESCRIPTIONS (Continued)

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ~)	Packard Bell PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
L1	.320A	37Ω	1 Henry	27005	C-2326	C-2991	TR3300	

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	Packard Bell PART No.	MEISSNER PART No.	
L2	Ant. Coil	0Ω	0Ω	*		
L3	RF Mixer Grid and Osc. Coils	0Ω		*		
L4	Fil. Choke	0Ω		*		
L5	Fil. Choke	0Ω		*		
L6	IF Trap	.6Ω		*		
L7	1st Video IF	.6Ω		*		
L8	1st Video IF Coupling	1Ω		29523		Wound on 3.3KΩ Resistor
L9	2nd Video IF	.3Ω	.3Ω	29055		
L10	3rd Video IF	.3Ω	.3Ω	29055		
L11	4th Video IF	.4Ω	.4Ω	29056		
L12	Peaking	4.5Ω		29520		36 Microhenries Black Dot
L13	Peaking	9.5Ω		29508	19-1921 ⊕	180 Microhenries White Dot Wound On 39KΩ Resistor
L14	4.5MC Trap	1.4Ω		29529		
L15	Peaking	7.8Ω		29506	19-1921 ◐	120 Microhenries Blue Dot Wound On 22KΩ Resistor
L16A	Peaking	6.5Ω		29507	19-1920	93 Microhenries Red Dot
B	Peaking				19-1921	120Microhenries Used In Models 2101, 2102, 2105, 2105A With Serial Number After 75696
L17A	Peaking	4Ω		29520		36 Microhenries Black Dot
B	Peaking				19-1920	96 Microhenries Used In Models 2101, 2102, 2105, 2105A Serial Number After 75696
L18	Peaking			29509	19-1922	250 Microhenries Green Dot Models 2101, 2102, 2105, 2105A 2602
L19	Sound IF	1.1Ω		29053		
L20	Ratio Det. Trans.	5Ω	.3Ω	29054		
L21	Hor. Freq.	100Ω		29527		Used As Horizontal Hold Control
L22	Hor. Lin.	30Ω		29504		

* Part Of Tuner Part No. 10528
⊕ Parallel With 39KΩ Resistor
◐ Parallel With 22KΩ Resistor

DIAL LIGHTS

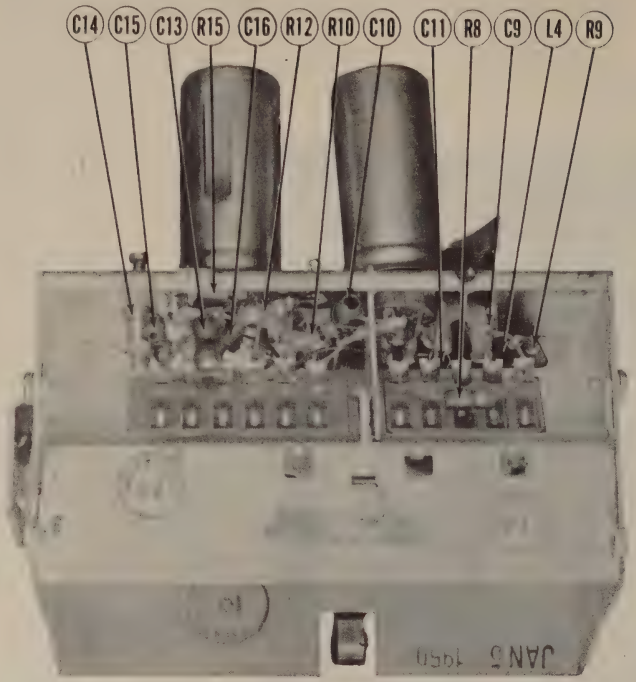
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					Packard Bell PART No.		
M1	Bayonet	6-8	.15	Brown	54002		Type #47

FUSES

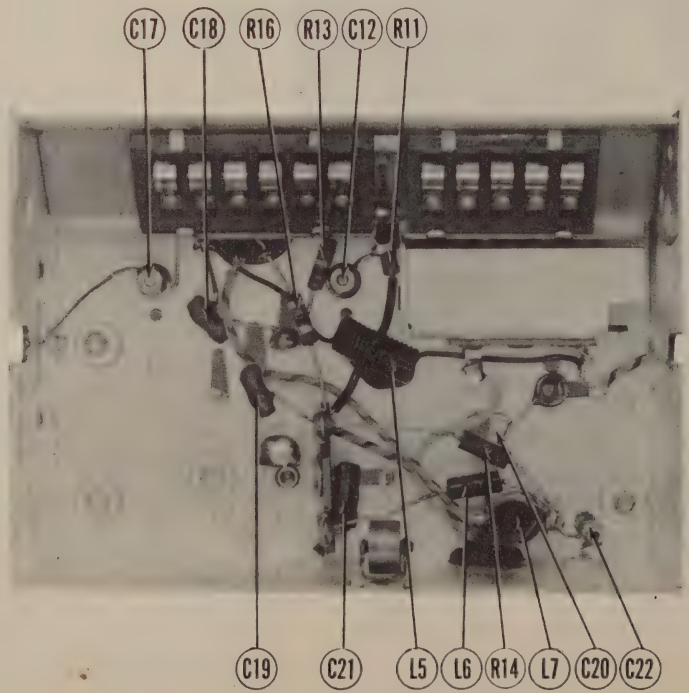
ITEM No.	TYPE	RATING	REPLACEMENT DATA				REMARKS
			PACKARD BELL PART No.		LITTLE FUSE PART No.		
			FUSE	HOLDER	FUSE	HOLDER	
M3	3AG	.25A	45004		318.250		

MISCELLANEOUS

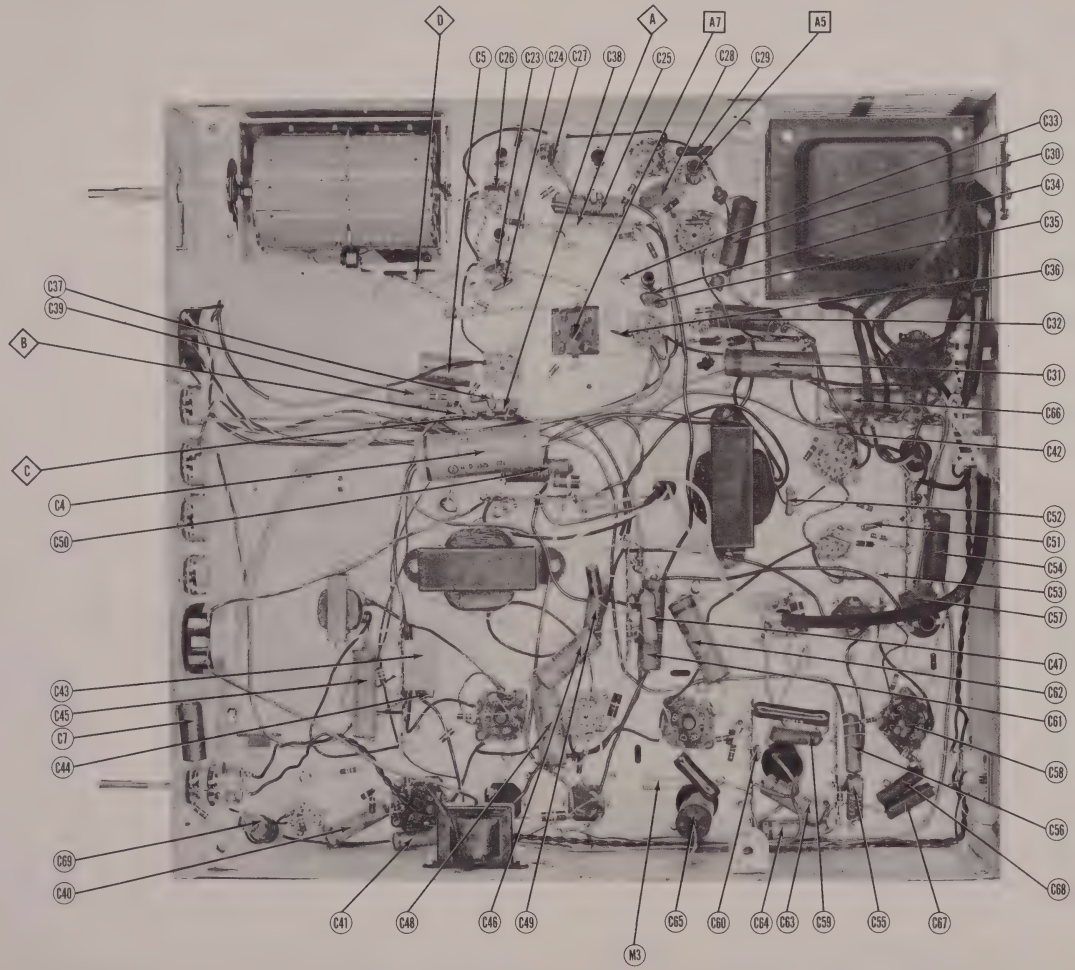
ITEM No.	PART NAME	PACKARD BELL PART No.	NOTES
M2	RF Tuner	10528	
M4	Ion Trap	28049	
	Safety Glass	55026-2	Models 2102, 2105, 2602, 2101
	Safety Glass	55028-2	Model 2105A
	Safety Glass	55022	Models 2202, 2204
	Knob	52067-1	Channel Selector
	Knob	52068	Fine Tuning
	Knob	52069-1	Volume
	Knob	52070	Contrast



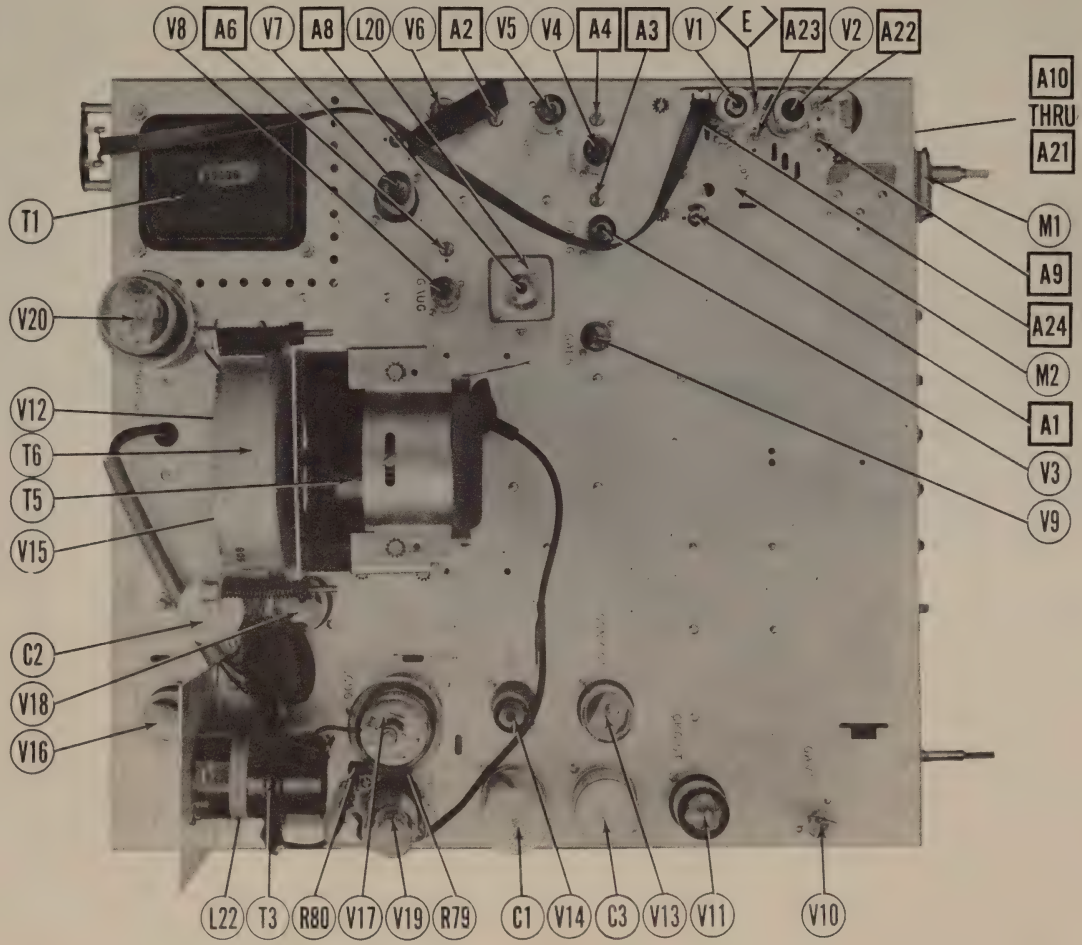
RF TUNER-RIGHT SIDE



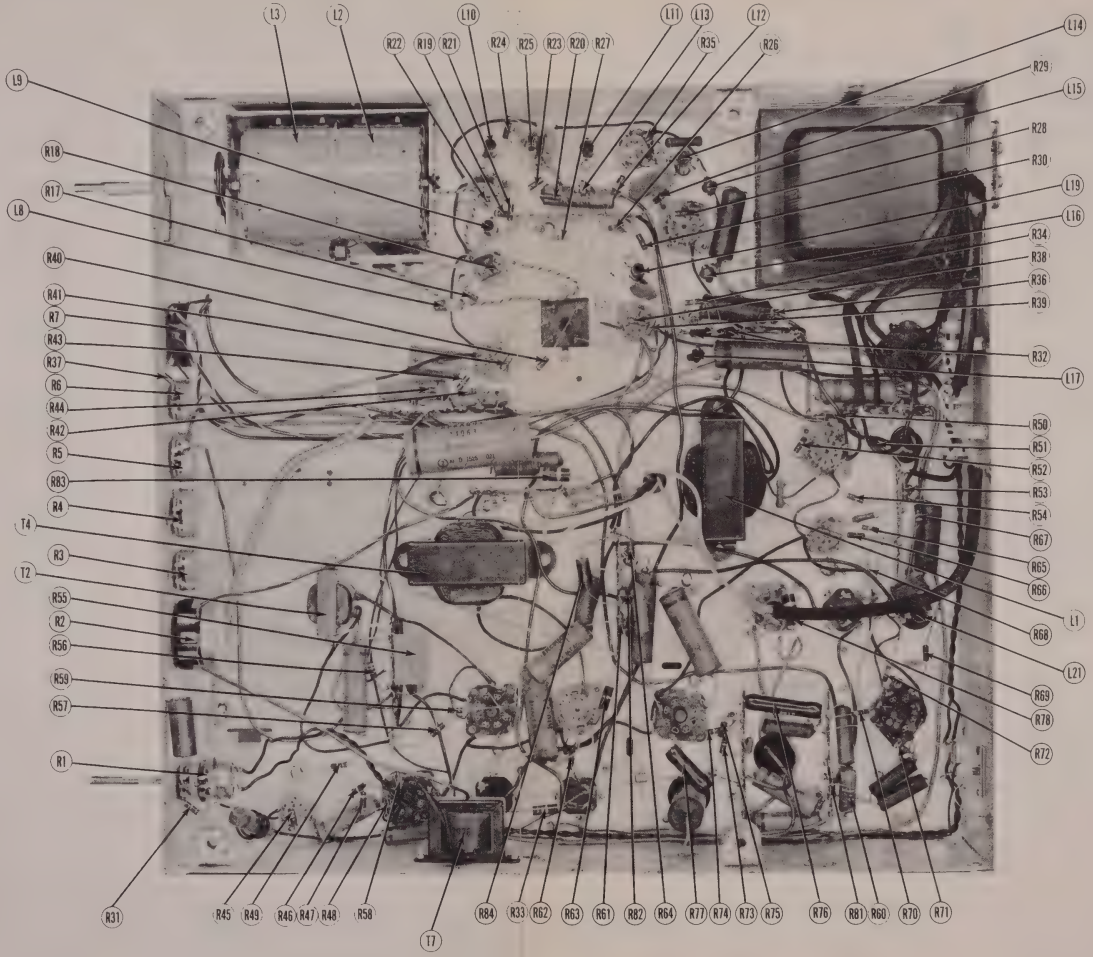
RF TUNER-BOTTOM VIEW



CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION



CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

PHOTOFACT* Folder

PHILCO MODELS

51-T1443PM, PL, PW.

IMPORTANT FILING NOTICE

The contents for this envelope will be found among the last folders in this complete set of folders . . . *unless* it has been purchased as part of a *complete* volume of PHOTOFACTS assembled in a DeLuxe Binder.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.

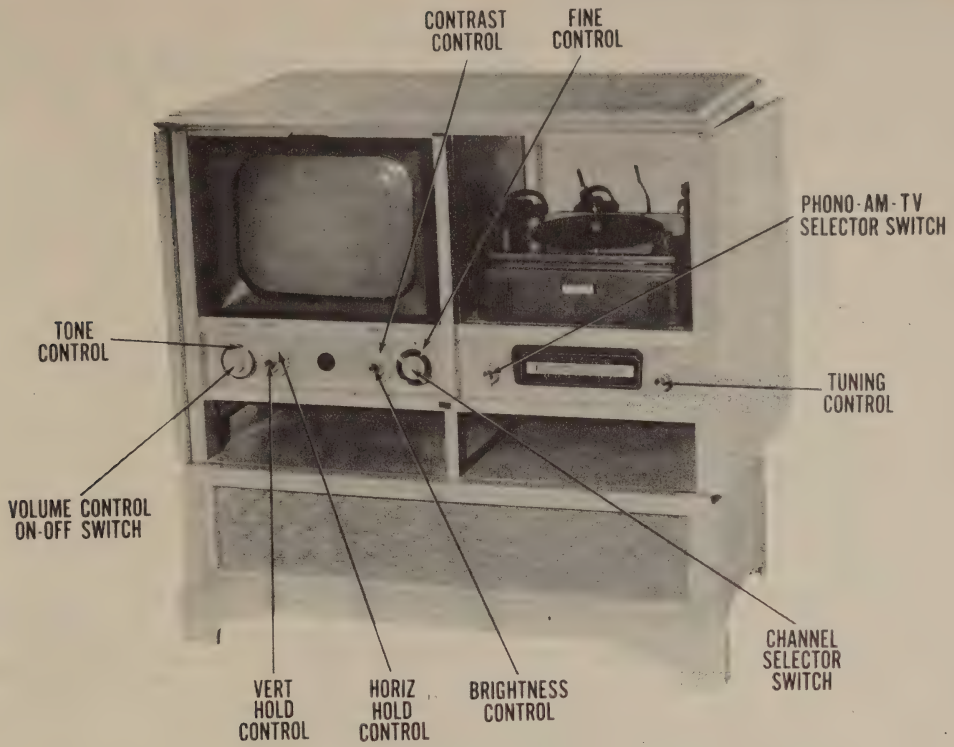
MODEL 51-T1443 PL

PHILCO MODELS
51-T1443PM, PL, PW.

HOWARD W. SAMS & CO., INC. • Indianapolis, Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1951 by Howard W. Sams & Co., Inc., Indianapolis, Indiana, U.S.A. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc."
Printed in U. S. of America

Date 1/51 Set No. 123—Folder No. 11



PHILCO MODEL 51-T1443PL

TRADE NAME	Philco Models 51-T1443PL, PM, PW
MANUFACTURER	Philco Corp., Tioga And C Streets, Philadelphia, Pa.
TYPE SET	TV-AM-Phono Combination Receiver
TUBES	Twenty-Five
POWER SUPPLY	110-120 Volts AC-60 Cycle
RATING	2.1 Amp. @ 117 Volts AC
TUNING RANGE— (TV)	Channels 2 thru 13 (AM) 540-1620KC

INDEX

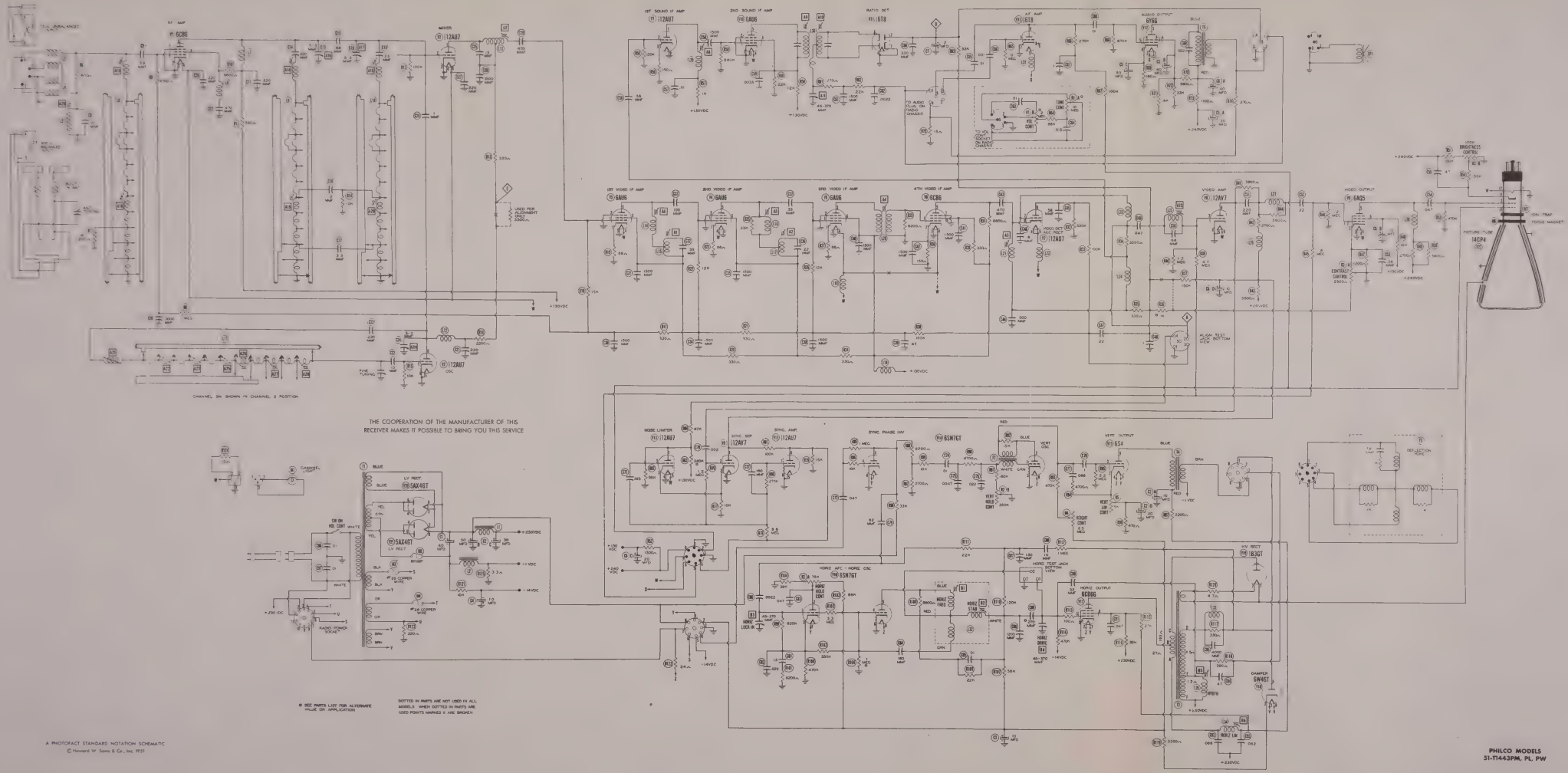
Alignment Instructions 6, 7
Dial Cord Stringing 12
Disassembly Instructions 12
Horizontal Sweep Circuit Adjustments 20
Parts List And Description ..... 13 thru 16
Photographs
Cabinet - Rear View 12
Capacitor Identification (RF-IF Chassis) 11
Capacitor Identification (Sweep Chassis) 17
Chassis - Bottom View (Radio) 5
Chassis - Top View (RF - IF Chassis) 4
Photographs (Continued)
Chassis - Top View (Sweep Chassis) 8, 20
RF Tuner 9
Resistor Identification (RF - IF Chassis) 18
Resistor Identifiaction (Sweep Chassis) 17
Schematic (Radio) 19
Schematic (TV) 2
Tube Placement Chart 3
Voltage And Resistance Measurements (Radio) 19
Voltage And Resistance Measurements (TV) 10

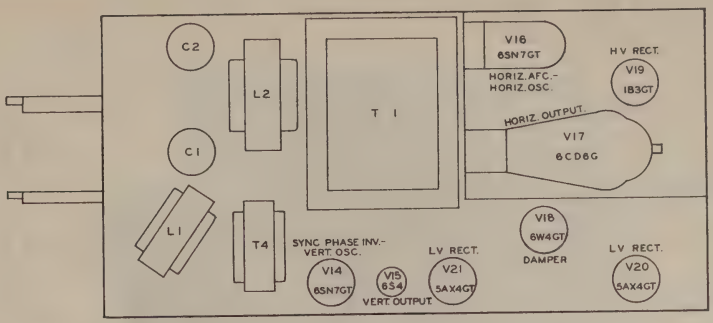
RECORD CHANGER UNIT - PHILCO MODEL M-22

HOWARD W. SAMS & CO., INC. • Indianapolis 1, Indiana

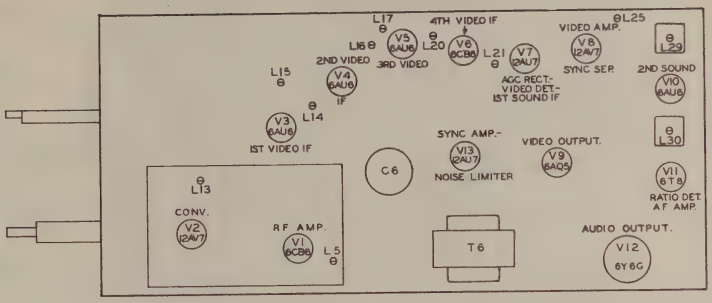
"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed."
"Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1951 by Howard W. Sams & Co., Inc., Indianapolis, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

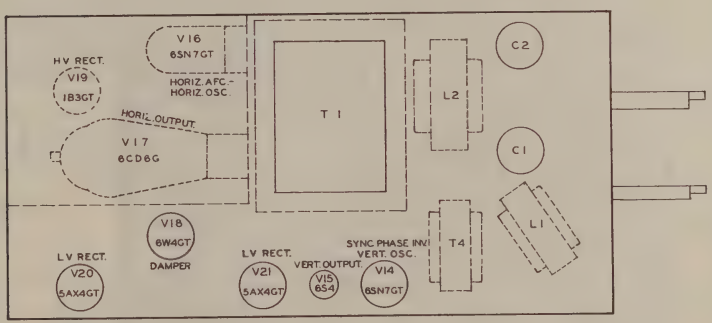
PHILCO MODELS
51-T1443PM, PL, PW


THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE
A PHOTOFACT STANDARD NOTATION SCHEMATIC
© Howard W. Sams & Co., Inc. 1951
PHILCO MODELS 51-T1443PM, PL, PW

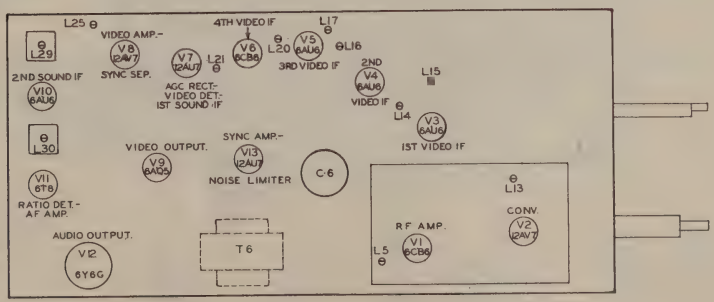


TOP VIEWS

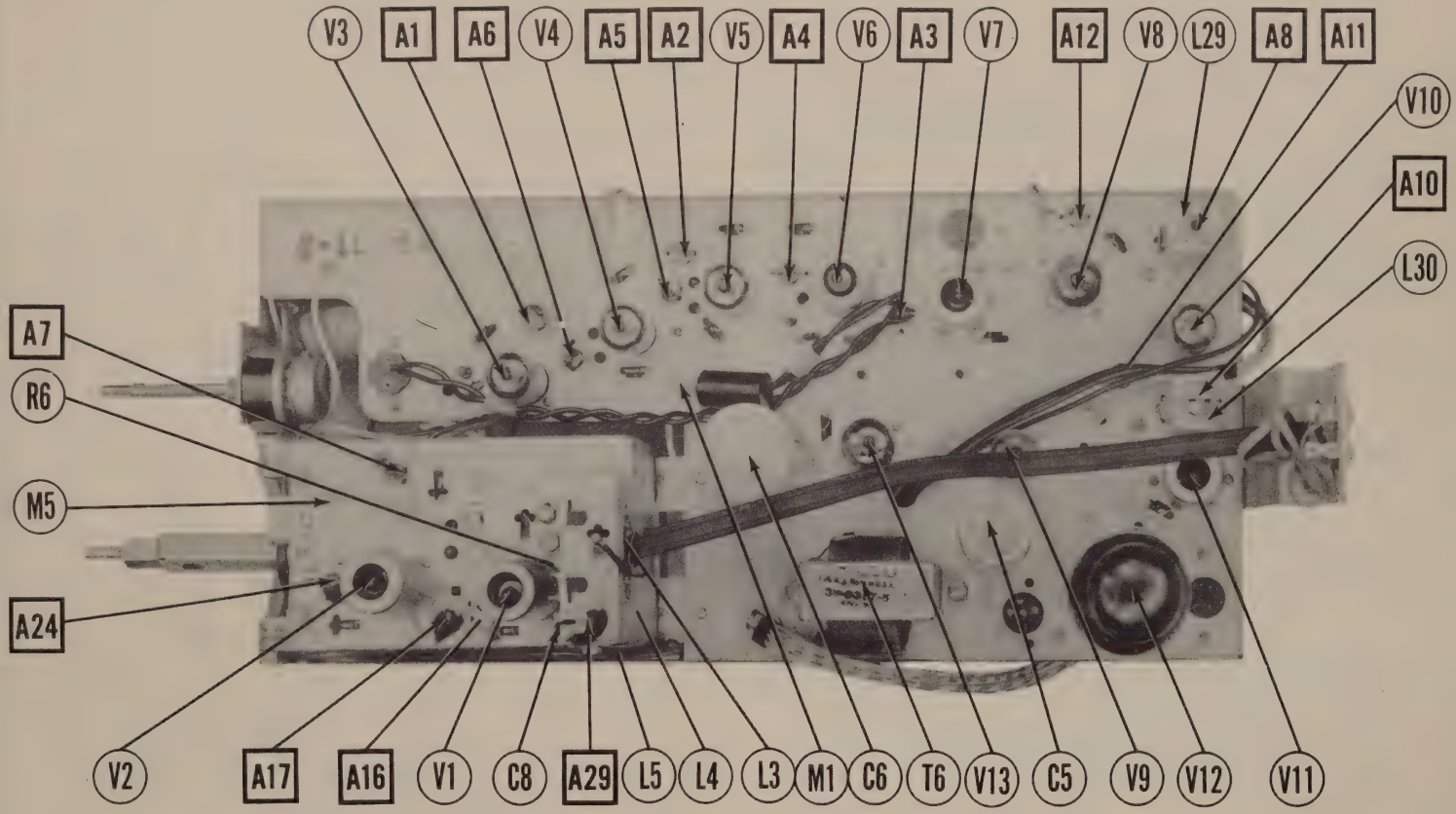




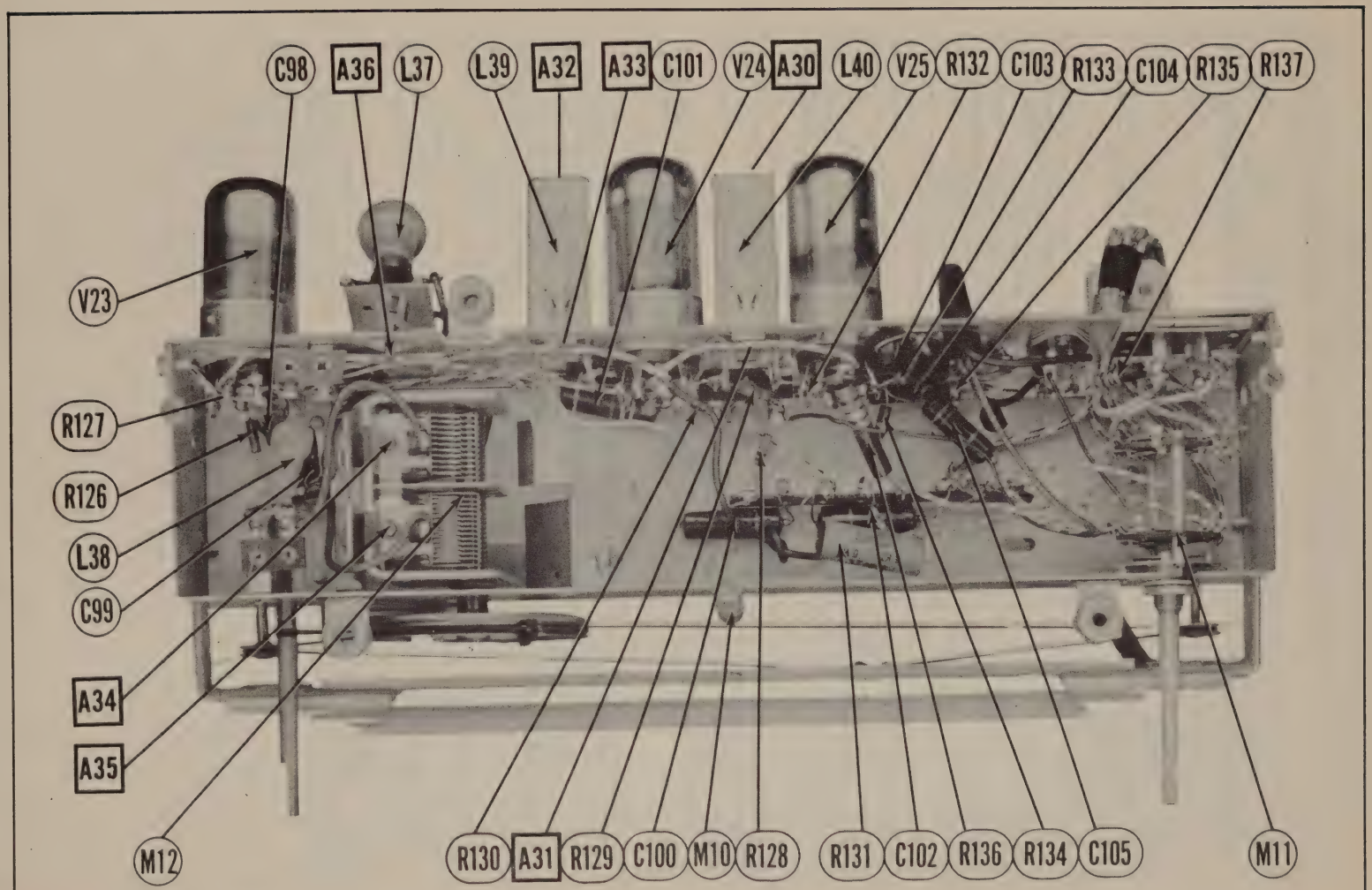
BOTTOM VIEWS



TUBE PLACEMENT CHART



RF-IF CHASSIS-TOP VIEW



RADIO CHASSIS-BOTTOM VIEW

TV ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The end of the high voltage lead should be securely taped and kept away from the chassis. Do not remove the horizontal oscillator tube to kill the high voltage.

All interconnecting cables should be in place to operate the receiver.

Turn the "TV-BC-Phono" switch to "TV" (counter-clockwise).

VIDEO IF ALIGNMENT

Connect the negative lead of a 3 volt battery to pin 3 of the test socket, connect the positive lead to chassis.

Remove the converter tube (V2) and replace it with a 12AV7 which has pin 6 removed. This will disable the local oscillator and prevent the possibility of erroneous indications.

Preset the adjustments as follows:

A1 and A2 maximum counter-clockwise.

A5 and A6 to the center of their range.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over dummy converter tube (V2). Low side to chassis.	28.1MC	Any	DC probe to point (A). Common to chassis.	A1	Remove bias battery and short AGC line to chassis. Adjust A1 clockwise to the first peak.
2.	Direct	"	21.85MC	"	"	A2	Adjust A2 clockwise to the first peak. Remove the AGC line short and replace the bias battery.
3.	Direct	"	24.75MC	"	"	A3	Adjust for maximum deflection.
4.	Direct	"	26.25MC	"	"	A4	Adjust for maximum deflection.
5.	Direct	"	26.6MC	"	"	A5	Adjust for maximum deflection.
6.	Direct	"	23.1MC	"	"	A6	Adjust for maximum deflection.
7.	Direct	"	23.5MC	"	"	A7	Adjust for maximum deflection.

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8.	Direct	High side to an ungrounded tube shield floating over dummy converter tube (V2). Low side to chassis.	24MC (10MC SWP)	22.1MC 26.6MC	Any	Vert. amp. to point (A). Low side to chassis.		Check for response similar to figure 1. If necessary retouch A3 thru A7. If any tuning core requires more than a slight adjustment repeat VTVM alignment.

SOUND IF ALIGNMENT

Connect a low range output meter across the speaker voice coil.

Remove the first video IF amplifier (V3) from its socket.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
9.	2200Ω carbon resistor	High side thru 2200Ω to point A. Low side to chassis.	4.5MC (400 ∿ AM Mod.)	Any	DC probe to point (B). Common to chassis.	A8, A9 A10	Adjust for maximum deflection. When A10 is adjusted maximum deflection on VTVM should coincide with minimum reading on output meter.
10.	"	"	"	"	"	A10, A11	Adjust for MINIMUM output indication.

11. After alignment is finished, restore set to original operating condition and tune in a local TV station. Adjust the fine tuning control for a slightly fuzzy picture. Slightly retouch A10 and A11 for minimum buzz.

4.5MC TRAP ADJUSTMENT

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
12.	2200Ω carbon resistors	High side thru 2200Ω to point A. Low side to chassis.	Not used	4.5MC (400 ∿ AM Mod.)	Any	Vert. amp. thru detector (figure 2) to pin 2 of picture tube. Low side to chassis.	A12	Adjust for MINIMUM 400 ∿ indication on scope.

RF ALIGNMENT

Remove the dummy converter tube and replace the original 12AV7 in its socket.

Disconnect the white (AGC) lead from the tuner, and connect the negative lead of a 1.5 volt battery to the wire, connect the positive lead to chassis.

Connect a 330 ohm resistor between the green lead from the tuner and chassis.

Connect the 3300Ω resistor in series with the red lead from the tuner. The junction of the resistor and the red lead is alignment point (C) as shown on the schematic.

The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
13.	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	213MC (15MC SWP)	211.25MC 215.75MC	13	Vert. amp. to point (C). Low side to chassis.	A13, A14 A15	Adjust A13 for maximum response amplitude and A14, and A15 for proper bandwidth and symmetry as shown in figure 3.
14.	"	"	177MC (10MC SWP)	175.25MC 179.75MC	7	"	A16, A17	Examine the tilt at the top of the response. Adjust A16 and A17 until response is a "mirror image" of the original, that is, tilted the same amount in the opposite direction. Repeat steps 13 and 14 until proper response is obtained on both channels.
15.	"	"	85MC (10MC SWP)	83.25MC 87.75MC	6	"	A18, A19, A20	Adjust A18 for maximum amplitude of response curve. Adjust A19 and A20 for proper bandwidth and symmetry.

TV ALIGNMENT INSTRUCTIONS (CONT.)

OSCILLATOR ALIGNMENT

See instructions under RF ALIGNMENT.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
16.	Two 120Ω carbon resistors.	Across antenna terminals with 120Ω in each lead.	Not used	237.85MC	13	Vert. amp. to point Ⓒ Low side to chassis.	A21	Adjust for zero beat indications on scope. This will be indicated by a narrow trace between two wide traces.
17.	"	"	"	225.85MC	11	"	A22	"
18.	"	"	"	213.85MC	9	"	A23	"
19.	"	"	"	207.85MC	8	"	A24	Check the oscillator frequency, if is it high turn A24 a few turns clockwise. If is low turn A24 counter-clockwise. If A24 is changed repeat steps 16, 17, 18, and 19.
20.	"	"	"	201.85MC	7	"	A25	Adjust for zero beat as in step 16.
21	"	"	"	109.85MC	6	"	A26	"
22.	"	"	"	93.85MC	4	"	A27	"
23.	"	"	"	81.85MC	2	"	A28	"

FM TRAP ADJUSTMENT

The FM trap (A29) has been pre-set at the factory to eliminate 100MC interference. If interference from an FM station on other than 100MC is encountered, turn the channel selector to the channel being interfered with and adjust A29 for minimum interference.

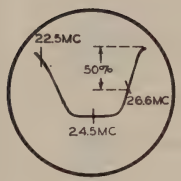


FIG. 1

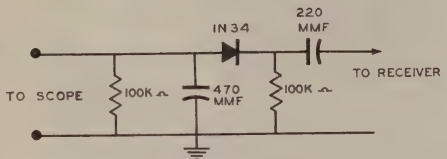


FIG. 2

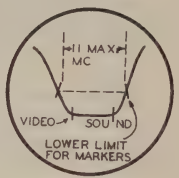


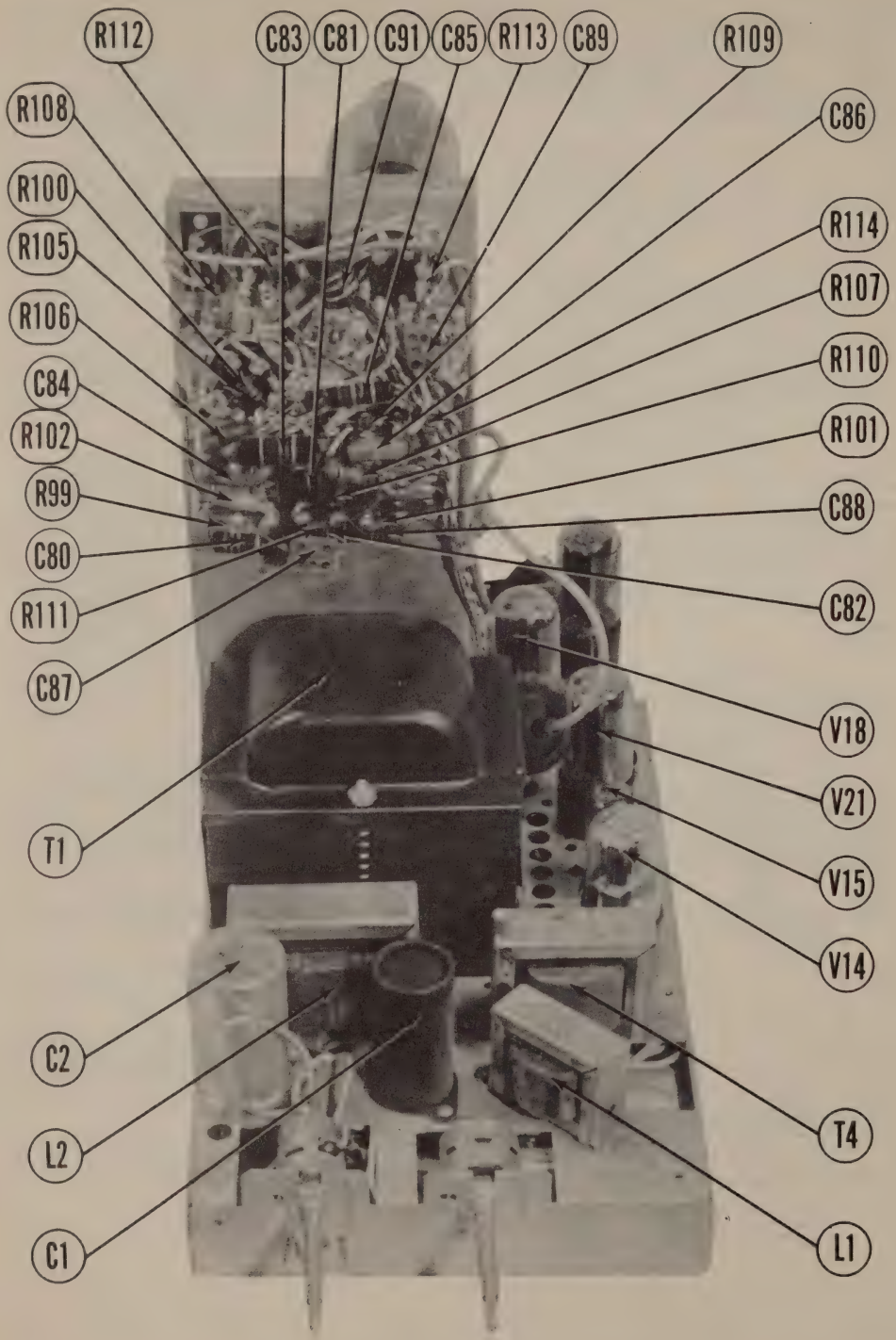
FIG. 3

RADIO ALIGNMENT INSTRUCTIONS

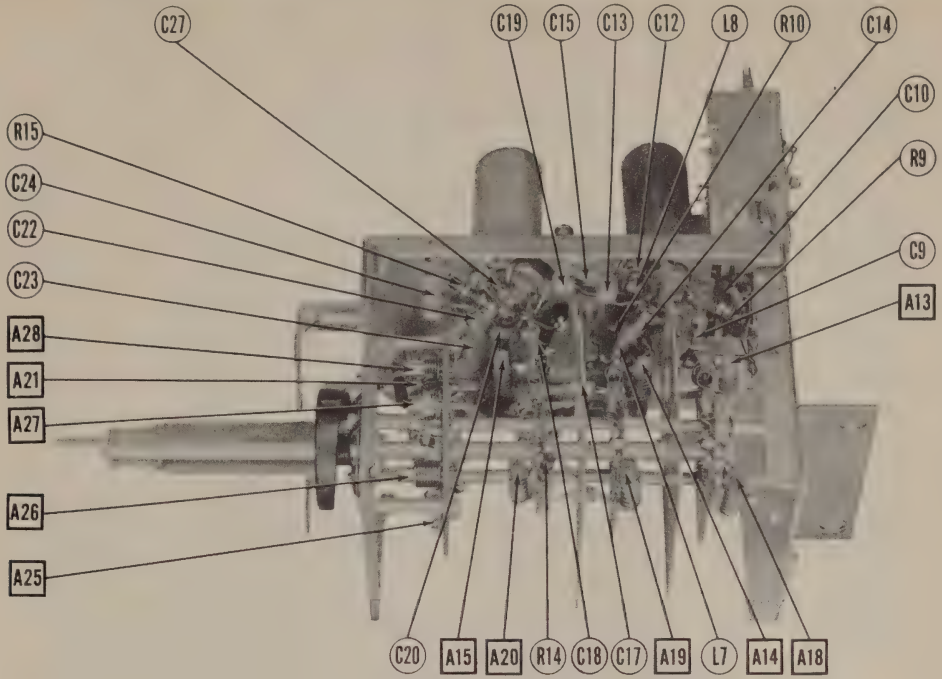
ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn tuning gang fully closed and set the pointer to the calibration mark near the left hand end of the dial backplate.
Turn the "TV-BC-Phono" switch to "BC" (center-position).
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

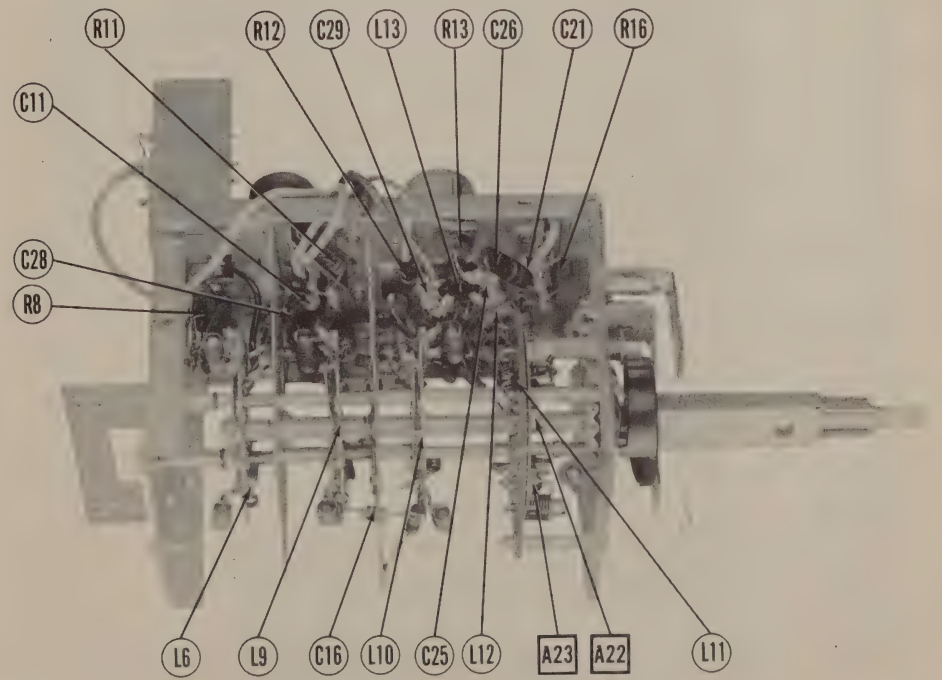
	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
24.	.1MFD	High side to pin 6 (Grid) of 7A8 (V23). Low side to chassis.	455KC (400 ~ Mod.)	BC	Tuning gang fully closed	Across voice coil	A30, A31, A32, A33	Adjust for maximum output.
25.	.1MFD	"	1620KC	"	Set pointer to calibration mark near right hand end of backplate.	"	A34	"
26.		Loop	1500KC	"	Tune for max. output	"	A35	Replace set in cabinet and connect loop. Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
	STEP 27 SHOULD BE PERFORMED ONLY AFTER REPLACEMENT OF ANTENNA COIL.							
27.		Loop	580KC	BC	Tune for max. output	Across voice coil	A36	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.



SWEEP CHASSIS-TOP VIEW



RF TUNER-RIGHT SIDE



RF TUNER-LEFT SIDE

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6CB6	-.6VDC	0V	0V	6.3VAC	130VDC	125VDC	0V		
V 2	12AV7	135VDC	-3.8VDC	0V	0V	0V	90VDC	§-5.6VDC	0V	6.3VAC
V 3	6AU6	-.4VDC	0V	0V	6.3VAC	125VDC	125VDC	.6VDC		
V 4	6AU6	-.3VDC	0V	0V	6.3VAC	125VDC	125VDC	.6VDC		
V 5	6AU6	-.3VDC	0V	0V	6.3VAC	130VDC	130VDC	.6VDC		
V 6	6CB6	0V	1.3VDC	0V	6.3VAC	75VDC	130VDC	0V		
V 7	12AU7	120VDC	0V	1.7VDC	6.3VAC	6.3VAC	-.3VDC	-.2VDC	1.1VDC	0V
V 8	12AV7	180VDC	0V	9.2VDC	0V	0V	135VDC	-.8VDC	0V	6.3VAC
V 9	6AQ5	-1.4VDC	7.2VDC	0V	6.3VAC	220VDC	130VDC	-1.4VDC		
V 10	6AU6	-.6VDC	0V	0V	6.3VAC	65VDC	65VDC	0V		
V 11	6T8	-.3VDC	-.6VDC	-.3VDC	0V	6VAC	0V	0V	-.7VDC	80VDC
V 12	6Y6G	0V	6.3VAC	155VDC	110VDC	0V	235VDC	0V	10VDC	
V 13	12AU7	9.4VDC	9.4VDC	9.2VDC	0V	0V	18VDC	-.5VDC	0V	6.3VAC
V 14	6SN7GT	-40VDC	225VDC 90VDC	0V	-.4VDC	38VDC	0V	0V	6.3VAC	
V 15	6S4	0V	35VDC 6VDC	0V	6.3VAC	0V	0V	0V	0V	340VDC
V 16	6SN7GT	-4.2VDC	70VDC	-20VDC	-55VDC	240VDC	0V	0V	6.3VAC	
V 17	6CD6G	0V	6.3VAC	0V	-15VDC	-15VDC	235VDC	0V	100VDC	TOP CAP *
V 18	6W4GT	0V	0V	360VDC	0V	230VDC	0V	¶	¶	
V 19	1B3GT	* DO NOT MEASURE								
V 20	5AX4GT	0V	240VDC	6.3VAC	260VAC	0V	260VAC	6.3VAC	240VDC	
V 21	5AX4GT	0V	240VDC	0V	260VAC	0V	260VAC	0V	240VDC	
V 22	14CP4	0V	0V	PIN 10 345VDC	PIN 11 100VDC	PIN 12 6.3VAC				

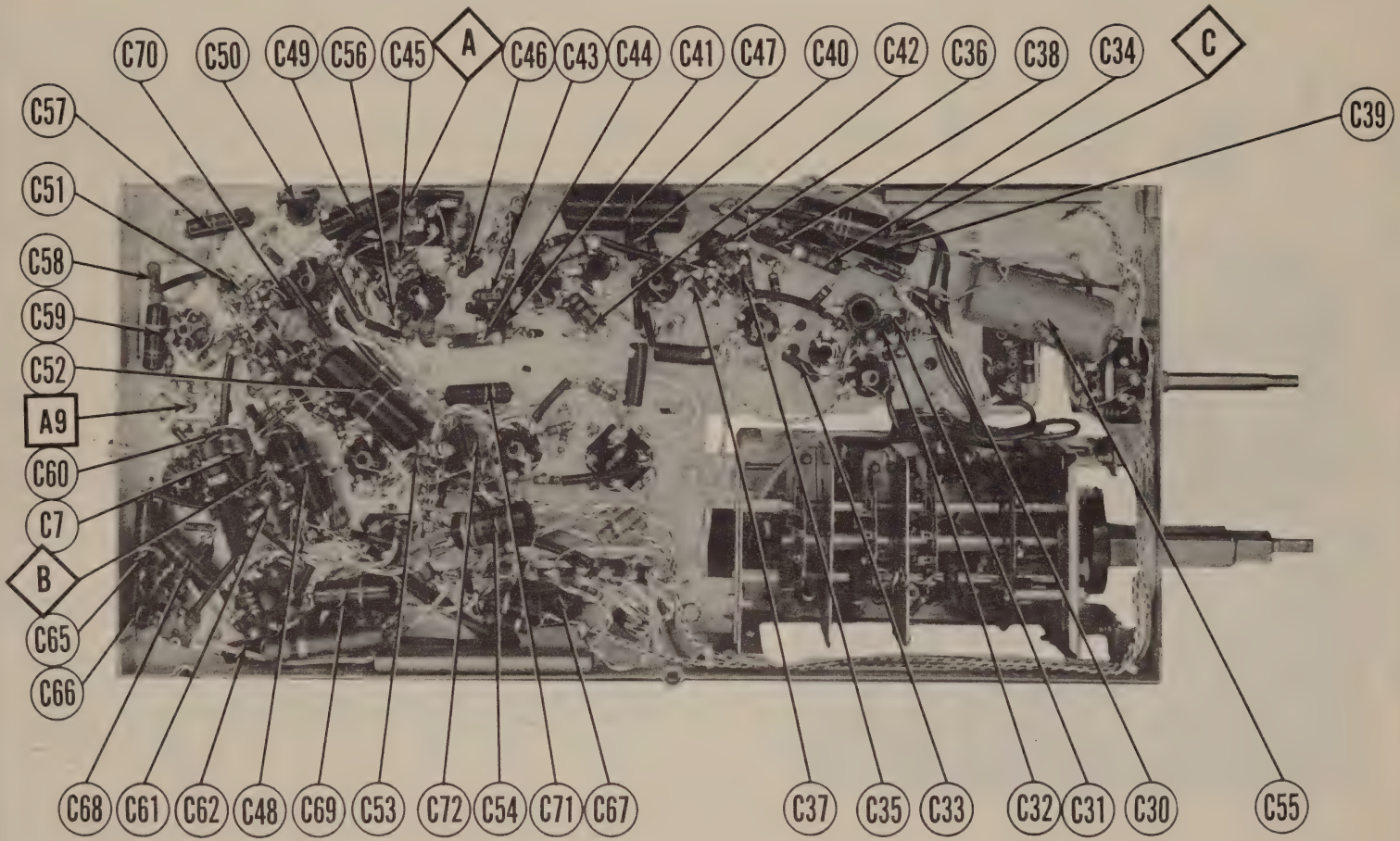
§ TAKEN WITH VACUUM TUBE VOLTMETER
* DO NOT MEASURE
¶ 6VAC MEASURED ACROSS FILAMENTS

RESISTANCE READINGS

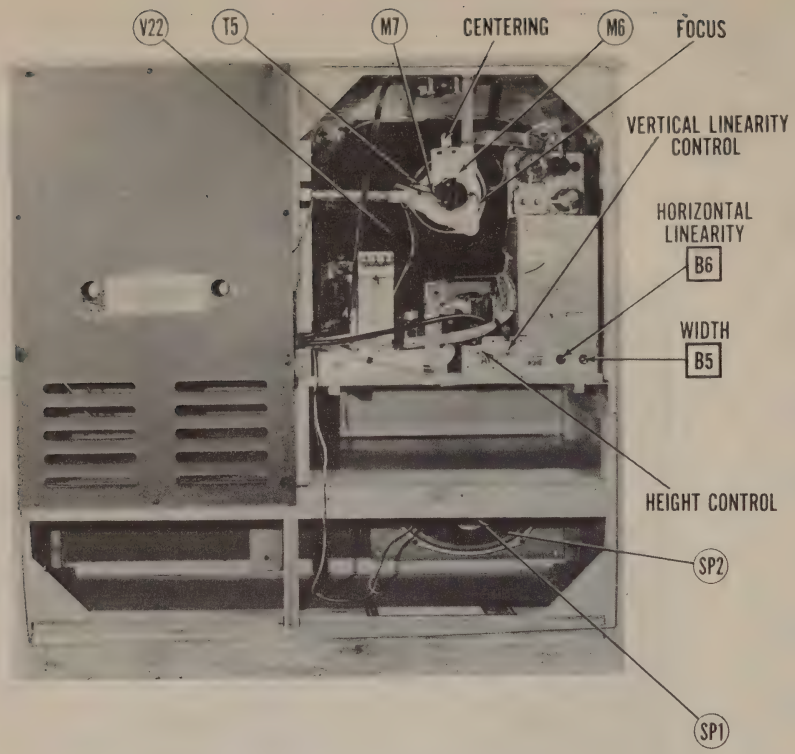
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6CB6	1.5Meg	0Ω	0Ω	.3Ω	†1.6KΩ	†8.4KΩ	0Ω		
V 2	12AV7	†1.6KΩ	100KΩ	0Ω	0Ω	0Ω	†3.5KΩ	10KΩ	0Ω	.3Ω
V 3	6AU6	545KΩ	0Ω	0Ω	.3Ω	†2KΩ	†2KΩ	68Ω		
V 4	6AU6	545KΩ	0Ω	0Ω	.3Ω	†1.7KΩ	†1.7KΩ	68Ω		
V 5	6AU6	545KΩ	0Ω	0Ω	.4Ω	†1.3KΩ	†1.3KΩ	68Ω		
V 6	6CB6	.2Ω	150Ω	0Ω	.4Ω	†9KΩ	†1.7KΩ	0Ω		
V 7	12AU7	†2.3KΩ	120KΩ	150Ω	.4Ω	.4Ω	330KΩ	4.5KΩ	1.3KΩ	0Ω
V 8	12AV7	†5.6KΩ	8Meg	10KΩ	0Ω	0Ω	†12KΩ	1Meg	0Ω	.3Ω
V 9	6AQ5	800KΩ	1.2KΩ	0Ω	.3Ω	†1.9KΩ	†11KΩ	800KΩ		
V 10	6AU6	680KΩ	0Ω	0Ω	.3Ω	†10KΩ	†10KΩ	0Ω		
V 11	6T8	Inf.	34KΩ	Inf.	0Ω	.4Ω	Inf.	0Ω	10Meg	#375KΩ
V 12	6Y6GT	Inf.	.3Ω	†1.3KΩ	†5KΩ	470KΩ	†0Ω	0Ω	180Ω	
V 13	12AU7	50KΩ	50KΩ	10KΩ	0Ω	0Ω	15KΩ	7.7Meg	0Ω	.3Ω
V 14	6SN7GT	430KΩ	#470KΩ #3Meg	0Ω	†1Meg	†12KΩ	0Ω	0Ω	.3Ω	
V 15	6S4	Inf.	5.5KΩ 470Ω	2.2Meg	.3Ω	0Ω	2.2Meg	Inf.	Inf.	#2.8KΩ
V 16	6SN7GT	1Meg	#60KΩ	370KΩ	450KΩ	#60KΩ	0Ω	0Ω	.3Ω	
V 17	6CD6G	Inf.	.3Ω	0Ω	480KΩ	480KΩ	#60KΩ	0Ω	†27KΩ	TOP CAP #39Ω
V 18	6W4GT	Inf.	Inf.	40KΩ	Inf.	†70Ω	Inf.	Inf.	Inf.	
V 19	1B3GT	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	TOP CAP #232Ω
V 20	5AX4GT	Inf.	7.5KΩ	1Ω	60Ω	Inf.	60Ω	1Ω	7.5KΩ	
V 21	5AX4GT	Inf.	7.5KΩ	Inf.	60Ω	Inf.	60Ω	Inf.	7.5KΩ	
V 22	14CP4	0Ω	470KΩ	PIN 10 #3.3KΩ	PIN 11 220KΩ	PIN 12 .3Ω				

† MEASURED FROM PIN 8 OF V21
# MEASURED FROM PIN 3 OF V18

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1,000 ohms.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panels controls set at minimum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.



RF-IF CHASSIS-BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION



CABINET–REAR VIEW

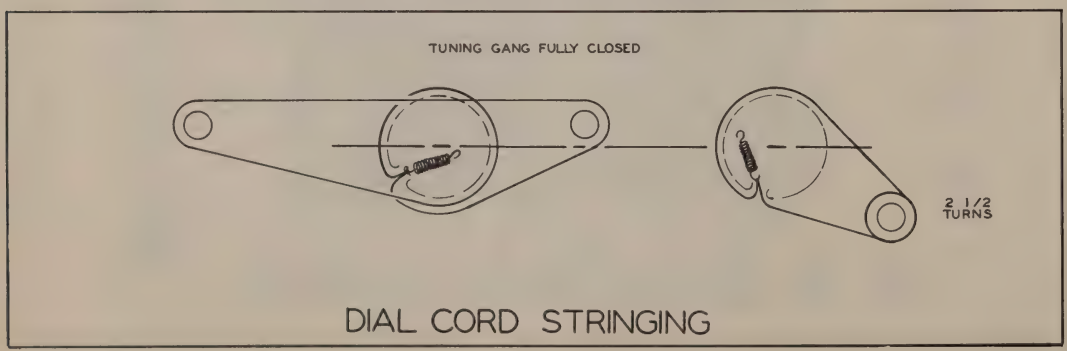
DISASSEMBLY INSTRUCTIONS

TV CHASSIS REMOVAL

1. Remove eight push-on type control knobs.
2. Remove six wood screws holding rear cover in place. Remove rear cover.
3. Disconnect built in antenna.
4. Disconnect yoke plug.
5. Disconnect RF-IF chassis plug.
6. Disconnect radio power cable.
7. Disconnect picture tube ground clamp.
8. Disconnect volume control plug.
9. Disconnect high voltage lead to picture tube.
10. Disconnect picture tube socket.
11. Disconnect speaker leads.
12. Remove three 1/4" hex head bolts from RF-IF chassis. Remove chassis.
13. Remove five 1/4" hex head bolts from sweep and power supply.
14. Remove four 11/32" nuts from speaker. Remove speaker.

RADIO CHASSIS REMOVAL

1. Remove two push-on type control knobs.
2. Disconnect phono plug.
3. Disconnect built-in antenna.
4. Disconnect phono motor plug.
5. Remove three 5/16" hex head bolts from chassis . Remove chassis.



DIAL CORD STRINGING

TV PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: PHILCO PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	RF Amp.	6CB6	6CB6	6CK	
V2	Converter	12AV7	12AV7	9A	
V3	1st Video IF Amp.	6AU6	6AU6	7BK	
V4	2nd Video IF Amp.	6AU6	6AU6	7BK	
V5	3rd Video IF Amp.	6AU6	6AU6	7BK	
V6	4th Video IF Amp.	6CB6	6CB6	6CK	
V7	AGC Rect.-Video Det.-1st Sound IF Amp.	12AU7	12AU7	9A	
V8	Video Amp.-Sync. Sep.	12AV7	12AV7	9A	
V9	Video Output	6AQ5	6AQ5	7BZ	
V10	2nd Sound IF Amp.	6AU6	6AU6	7BK	
V11	Ratio Det.-AF Amp.	6T8	6T8	9E	
V12	Audio Output	6Y6G	6Y6G	7AC	
V13	Sync. Amp.-Noise Limiter	12AU7	12AU7	9A	
V14	Sync. Phase Inv. Vert. Osc.	6SN7GT	6SN7GT	8BD	
V15	Vert. Output	6S4	6S4	9AC	
V16	Hor. AFC-Hor. Osc.	6SN7GT	6SN7GT	8BD	
V17	Hor. Output	6CD6G	6CD6G	5BT	
V18	Damper	6W4GT	6W4GT	4CG	
V19	HV Rectifier	1B3GT	1B3GT	3C	
V20	LV Rectifier	5AX4GT	5AX4GT	5T	
V21	LV Rectifier	5AX4GT	5AX4GT	5T	
V22	Picture Tube	14CP4	14CP4	12D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: PHILCO PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1	40	350	30-2568-37	E3A135		UP4035		TVL-1621	Filter
C2A	10	400	30-2570-58	AF663J6B		UPT428			● Vert. Output Dec.
B	50	350							■ Filter
C	30	350							▲ Filter
D	30	25							Vert. Output Cath.
C3	10	450	30-2568-46	PRS450/10		BR1045A		TVA-1705	Decoupling
C4	10	25	30-2417-8	E26E117		BR102A		TVA-1204	Bias Filter
C5A	30	450	30-2570-73	AFH6J1018A					■ Filter
B	40	350							▲ Output Screen
C	50	25							Output Screen
C6A	40	450	30-2570-41	AF8422J		UPT421145		TVL-4840	● Filter
B	10	450							■ V. Output Screen
C	20	450							▲ Filter
D	10	450							Decoupling
C7	2	50	30-2417-7	E26E6		BBR2-50T		TVA-1301	Stabilizing Cap
C8	20		62-02030901l	SI20NPO	TCZ-20		NPOK-20		Fixed Trimmer
C9	39		62-03940901l	SI39	D6-390		GP1K-39		RF Coupling
C10	10000		30-1238-2	BPD-01	DD-103		821-01	36C1	AGC Filter
C11	220		30-1225-11	SI220	D6-221		GP2K-220	19C13	RF Amp. Dec.
C12	470		62-147001011	SI470	D6-471		GP2K-470	19C15	RF Amp. Screen
C13	.5-3		31-6520-1		829-3				Variable Trimmer
C14	220		30-1225-11	SI220	D6-221		GP2K-220	19C13	RF Coupling
C15	.68		30-1221-11		TCZ-.68				RF Coupling
C16	1.2		30-1221-7						RF Coupling
C17	3.3		30-1221-9	SI3.3NPO	TCZ-3.3		NPOK-3.3		RF Coupling
C18	33		62-033009001	SI33	D6-330		GP1K-33	19C24	RF Coupling
C19	.5-3		31-6520-1		829-3				Variable Trimmer
C20	1		30-1224-7		TCZ-1				Osc. Coupling
C21	220		30-1225-11	SI220	D6-221		GP2K-220	19C13	Osc. Plate Dec.
C22	10		30-1224-51	SI10N750	TCN-10		N750K-10	19C4	Osc. Grid Cap
C23	220		30-1225-11	SI220	D6-221		GP2K-220	19C13	Osc. Feedback
C24	.5-3		30-6520-1		829-3				Variable Trimmer
C25	15		62-01540901l	SI15	D6-150		GP1K-15	19C22	Fixed Trimmer
C26	1500		30-1225-19	SI1500	D6-152		GP2L-0015	29C8	Conv. Plate Dec.
C27	220		30-1225-11	SI220	D6-221		GP2K-220	19C13	Conv. Fil.
C28	220		30-1225-11	SI220	D6-221		GP2K-220	19C13	RF Amp. Fil.
C29	470		62-147001001	SI470	D6-471		GP2K-470	19C15	IF Coupling
C30	1500		62-215001011	SI1500	D6-152	1W5D15	GP2L-0015	29C8	AGC Filter
C31	1500		62-215001011	SI1500	D6-152	1W5D15	GP2L-0015	29C8	1st V. IF Dec.
C32	39		62-03940901l	SI39	D6-390	5R5Q4	GP1K-39	MS-44	Fixed Trimmer
C33	100		62-110009001	SI100	D6-101	5W5T1	GP1K-100	19C11	IF Coupling
C34	1500		62-215001011	SI1500	D6-152	1W5D15	GP2L0015	29C8	AGC Filter
C35	1500		62-215001011	SI1500	D6-152	1W5D15	GP2L0015	29C8	2nd V. IF Dec.
C36	22		62-022009001		TCZ-22		NPGK-22	29C12	Fixed Trimmer
C37	33		62-033300001	SI33	D6-330	5W5Q4	GP1K-33	19C24	IF Coupling
C38	1500		62-215001011	SI1500	D6-152	1W5D15	GP2L-0015	29C8	AGC Filter
C39	.47	200	45-3505-34	P288-47		GT2P5		2TM-P47	AGC Filter
C40	1500		62-215001011	SI1500	D6-152	1W5D15	GP2L-0015	29C8	3rd V. IF Dec.
C41	1500		62-215001011	SI1500	D6-152	1W5D15	GP2L-0015	29C8	4th V. IF Screen
C42	1500		62-215001011	SI1500	D6-152	1W5D15	GP2L-0015	29C8	4th V. IF Cathode
C43	470		62-147001001	SI470	D6-471	5W5T5	GP2K-470	19C15	IF Coupling
C44	1500		62-215001011	SI1500	D6-152	1W5D15	GP2L-0015	29C8	RF Bypass
C45	56		62-056409001	SI56	D6-560	5W5Q5	GP1K-56	19C28	AGC Rect. Plate
C46	8		30-1224-5	SI8.2NPO	TCZ-8.8	5W5V5	NPOK-8.2	19C3	V. Diode Filter
C47	.22	200	45-3505-49	P488-22		GT2P25		2TM-P22	AGC Filter
C48	.1	200	45-3505-47	P288-1	DF-104	PTE4P1		2TM-P1	RF Bypass
C49	.047	200	45-3505-62	P288-047	DF-503	PTE4S5		2TM-S47	Video Coupling
C50	68		62-06840901l	SI68	D6-680	5R5Q7	GP1K-68	19C10	Fixed Trimmer
C51	220		30-1224-20	SI220	D6-221	5W5T2	GP2K-220	19C13	Peaking
C52	.22	400	45-3505-48	P488-22		GT4P25		4TM-P22	Video Coupling
C53	56		62-056409001	SI56	D6-560	5W5Q5	GP1K-56	19C28	V. Output Cathode
C54	.047	400	45-3505-62	P488-047	DF-503	PTE4S5		4TM-S47	Video Coupling
C55	.47	400	45-3500-4	684-5		GT4P5		4TM-P5	Pic. Tube Cath.
C56	56		62-056409001	SI56	D6-560	5W5Q5	GP1K-56	19C28	S. IF Coupling
C57	.01	400	45-3505-58	P488-01	D6-103	PTE4S1	821-01	4TM-S1	1st S. IF Dec.
C58	1500		62-215001011	SI1500	D6-152	1W5D15	GP2L-0015	29C8	S. IF Coupling
C59	.0033	400	45-3505-55	P488-0033	D6-332	PTE6D3		6TM-D3	2nd S. IF Dec.
C60	330		60-10335407	SI330	D6-331	5W5T3	GP2K-330	19C14	RF Bypass
C61	1500		62-215001001	SI1500	D6-152	1W5D15	GP2L-0015	29C8	De-emphasis
C62	.0022	400	45-3505-54	P688-0022	D6-222	PTE6D2	GP2M-0022	6TM-D22	De-emphasis

TV PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (CONT.)

ITEM No.	RATING CAP.	VOLT	REPLACEMENT DATA PHILCO PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C63	.01	400	45-3505-58	P488-01	D6-103	PTE4S1	821-01	4TM-S1	Audio Coupling
C64	.015	200	45-3505-59	P288-015		PTE5S15		6TM-S15	Tone Comp.
C65	.01	400	45-3505-58	P488-01	D6-103	PTE4S1	821-01	4TM-S1	Tone Comp.
C66	.001	400	45-3505-52	P488-001	D6-102	PTE5D1	GP2L-001	6TM-D1	Audio Coupling
C67	1	400	45-3505-64	P488-1		PTE4S1		4TM-P1	AF Amp. Dec.
C68	.01	600	45-3505-57	P688-01	D6-103	PTE6S1	821-01	6TM-S1	Audio Coupling
C69	.022	600	45-3505-60	P688-022	DF-203	PTE6S22		6TM-S22	Output Plate
C70	.022	400	45-3505-53	P488-022	DF-203	PTE4S2		4TM-S22	Sync. Coupling
C71	.015	200	45-3505-59	P288-015		PTE5S15		6TM-S15	Sync. Coupling
C72	180	500	30-1244-5	1469-0002	D6-181	SH5T1	GP1K-180	M3-32	Sync. Coupling
C73	.047	400	45-3505-62	P488-047	DF-503	PTE4S5		4TM-S47	Sync. Coupling
C74	.01	400	45-3505-58	P488-01	D6-103	PTE4S1	821-01	4TM-S1	Vert. Sync. Coupling
C75	.0047	600	45-3505-56	P688-0047	DF-502	PTE6S47	GP2M-0047	6TM-D47	Integrator Net
C76	.022	200	45-3505-60	P488-022	DF-203	PTE4S2		4TM-S22	Integrator Net
C77	.068	400	45-3505-63	P488-068				4TM-S68	Vert. Discharge
C78	.1	400	45-3505-54	P488-1	DF-104	PTE4P1		4TM-P1	Vert. Sweep Coupling
C79	83	500	60-00625237	SI82	D6-820	SR5T1	GP1K-82	M3-31	Hor. Sync. Coupling
C80	.0022	600	45-3505-54	P688-0022	D6-222	PTE6D2	GP2M-0022	6TM-D22	Hor. Sync. Coupling
C81	.15	200	45-3505-48	P288-15				2TM-P15	AFC Filter
C82	.022	200	45-3505-43	P488-022	DF-203	PTE4S2		4TM-S22	AFC Filter
C83	.047	400	45-3505-62	P488-047	DF-503	PTE4S5		4TM-S47	Hor. AFC Filter
C84	180	1000	30-1244-5	1469-REV-0002					Hor. Osc. Grid
C85	.01	400	45-3505-58	P488-01		PTE4S1	821-01	4TM-S1	Fixed Trimmer
C86	1200	500	60-3285-1						Horiz. Discharge
C87	150	500	60-10155407	[illegible]	D6-151	SW5T15	GP2K-150	1FM-315	Voltage Divider
C88	10	500	30-1244	[illegible]	D6-100	SW5Q1	GP1K-10	M3-41	Hor. Feedback
C89	270	500		[illegible]	D6-271	SW5T3	GP2K-270	M3-33	Hor. Sweep Coupling *
C90	33	500	[illegible]	SI33	D6-330		19C24		Hor. Feedback
C91	.047	400	45-3505-62	P488-047	DF-503	PTE4S5		4TM-S47	Hor. Output Screen
C92	.068	400	45-3505-63	P488-068				4TM-S68	Damper Filter
C93	.082	400	30-4610-3						Damper Filter
C94	.47	200	45-3505-34	P288-47		GT3P5		3TM-P47	Hor. Sweep Coupling
C95	4000	500		1467-004	D6-402	ID5D4	GP2M-004	1FM-21	Fixed Trimmer
C96	.01	400	45-3505-57	P488-01	D6-103	PTE4S1	821-01	4TM-S1	Line Filter
C97	.01	600	45-3505-57	P688-01	D6-103	PTE6S1	821-01	6TM-S1	Line Filter

* Some models use 330MMF in this application. Mfgrs. part # 82-133001001.

CONTROLS

ITEM No.	RATING RESISTANCE	WATTS	REPLACEMENT DATA PHILCO PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	10Meg	½	33-5563-28		RTV-240	SBBT-652-S	Tone control - panel - See note
B	2Meg	½					Volume control - tapped Ⓒ 1meg - rear - See note
R1A	5Meg	½	33-5553-28				Tone control - panel - See note
B	2Meg	½					Volume control - tapped Ⓒ 1meg - rear - See note
R2A	75KΩ	½	33-5563-26		RTV-241	SBB-651	Horizontal hold control - panel
B	250KΩ	½					Vertical hold control - rear
R3A	2500Ω	2	33-5563-27		RTV-242		Contrast control - wire wound - panel
B	10KΩ	½					Brightness control - rear
R4A	2.5Meg	½	33-5565-10	QII-239	AM-84-S	AN-83	Height control
B	Shaft		Not req.	RQ	FKS-1/4	AK-1	Attach to R4A per instructions
R5	3000Ω	2	33-5545-10	W-5000 *	43-5000 *	VK-135	Vert. linearity control - wire wound

* Fashion shaft to duplicate original.
Note - Alternate parts.

RESISTORS

ITEM No.	RATING RESISTANCE	WATTS	REPLACEMENT DATA PHILCO PART No.	IRC PART No.	IDENTIFICATION CODES ALL RESISTORS ± 10% UNLESS OTHERWISE STATED
R6	1800Ω	½	66-2188340	BTS-1800	Antenna Loading
R7	1200Ω	½	66-2128340	BTS-1200	Antenna Coil Shunt - See Note 1
R8	1Meg 20%	½	66-2108340	BTS-1Meg	AGC Network
R9	4700Ω	½	66-2478340	BTS-4700	RF Amp. Grid
R10	560Ω	½	66-2568340		RF Amp. Screen
R11	330Ω 20%	½	66-2338340	BTS-330	RF Amp. Decoup
R12	100KΩ	½	66-4108340		Mixer Grid
R13	330Ω 20%	½	66-2338340	BTS-330	Mixer Decoup
R14	10KΩ	½	66-3108340		Osc. Coil Shunt
R15	10KΩ	½	66-3108340		Osc. Grid
R16	22,000Ω 20%	½	66-2228340	BTS-2200	Osc. Plate
R17	33KΩ	½	66-1338310	BTS-330	AGC Network
R18	15KΩ	½	66-3158310		1st Video IF Amp. Grid
R19	68Ω	½	66-0688340		1st Video IF Amp. Cathode
R20	330Ω	½	66-1338340	BTS-330	1st Video IF Amp. Decoup
R21	330Ω	½	66-1338340	BTS-330	AGC Network
R22	12KΩ	½	66-3128340		2nd Video IF Amp. Grid
R23	68Ω	½	66-0688340		2nd Video IF Amp. Cathode
R24	330Ω	½	66-1338340	BTS-330	Decoup
R25	33KΩ	½	66-3338340		3rd Video Transformer Shunt
R26	12KΩ	½	66-3128340		3rd Video IF Amp. Grid
R27	68Ω	½	66-0688340		3rd Video IF Amp. Cathode
R28	33Ω	½	66-1338340	BTS-330	4th Video IF Amp. Screen
R29	82Ω	½	66-2828340		4th Video IF Transformer Shunt
R30	15Ω	½	66-1528340	BTS-150	4th Video IF Amp. Cathode
R31	560Ω	½	66-2568340		4th Video IF Amp. Plate
R32	33KΩ	½	66-4338340	BTS-330K	AGC Grid
R33	100KΩ	½	66-4108340	BTS-100K	AGC Network
R34	330Ω	½	66-2338340	BTS-3300	Video Det. Diode Load
R35	330Ω	½	66-1338340	BTS-330	Isolation
R36	1000Ω	½	66-2108340	BTS-1000	Voltage Divider - See Note 2
R37	150KΩ	½	66-4158340	BTS-150K	Voltage Divider
R38	100KΩ	½	66-4108340	BTS-100K	AGC Network
R39	6.7Meg	½	66-5678340	BTS-6.7Meg	Bias Network
R40	1.2Meg	½	66-5128340	BTS-1.2Meg	Video Amp. Grid
R41	3900Ω	½	66-2398340	BTS-3900	Video Amp. Plate
R42	2700Ω	½	66-2728340	BTS-2700	Video Amp. Plate
R43	5600Ω	½	66-2568340	BTS-5600	Decoup
R44	3900Ω	½	66-2398340	BTS-3900	Video Peaking Coil Shunt
R45	1.5Meg	½	66-5158340	BTS-1.5Meg	Bias Network
R46	1.2Meg	½	66-5128340	BTS-1.2Meg	Video Output Grid
R47	22,000Ω 10%	½	66-2228340	BTS-2200	Video Output Cathode

RESISTORS (CONT.)

ITEM No.	RATING RESISTANCE	WATTS	REPLACEMENT DATA PHILCO PART No.	IRC PART No.	IDENTIFICATION CODES
R48	10KΩ	½	66-3108340	BTS-10K	Video Output Screen
R49	2700Ω	2	66-2275340	BTB-3700	Video Output Plate
R50	5600Ω	½	66-2568340	BTS-5600	Video Output Plate
R51	100KΩ	½	66-4108340	BTS-100K	Voltage Divider
R52	1300Ω	10	33-2435-31	1.3/4A-1150	Decoup - Wire Wound
R53	470KΩ	½	66-4748340	BTS-470K	Picture Tube Grid
R54	150KΩ	½	66-4158340	BTS-150K	Picture Tube Cathode
R55	120KΩ	½	66-4128340	BTS-120K	1st Sound IF Amp. Grid
R56	150Ω	½	66-1508340	BTS-150	1st Sound IF Amp. Cathode
R57	1000Ω	½	66-2104340	BTS-1000	1st Sound IF Amp. Decoup
R58	680KΩ	½	66-4688340	BTS-680K	2nd Sound IF Amp. Grid
R59	12KΩ	½	66-3124340	BTA-12K	2nd Sound IF Amp. Decoup
R60	22KΩ	½	66-3228340	BTS-22K	Voltage Divider
R61	270Ω	½	66-1278340	BTS-270	Balancing
R62	22KΩ	½	66-3228340	BTS-22K	De-emphasis
R63	33KΩ	½	66-3338340	BTS-33K	AVC Network
R64	68KΩ	½	66-3688340	BTS-68K	Tone Compensation
R65	10Meg 20%	½	66-5108340	BTS-10Meg	AF Amp. Grid
R66	270KΩ	½	66-4278340	BTS-270K	AF Amp. Plate
R67	100KΩ	½	66-4108340	BTS-100K	AF Amp. Plate Decoup
R68	470KΩ	½	66-4748340	BTS-470K	Output Grid
R69	180Ω	2	66-1184340	BW-2-180	Output Cathode - Wire Wound
R70	5600Ω	2	66-2565340	BTB-5600	Output Screen
R71	18KΩ	2	66-3185340	BTB-18K	Voltage Divider
R72	33KΩ	½	66-3338340	BTB-33K	Voltage Divider
R73	1100Ω	½	33-2435-33		Output Decoup - Wire Wound
R74	270Ω	½	66-1278340	BTS-270	Feedback Network
R75	15Ω	½	66-0153340	BW-½-15	Feedback Network
R76	1.2Meg	½	66-5128340	BTS-1.2Meg	Sync. Sep. Grid
R77	10KΩ	½	66-3108340	BTS-10K	Sync. Sep. Cathode
R78	6.8Meg	½	66-5688340	BTS-6.8Meg	Voltage Divider
R79	15KΩ	½	66-3158340	BTS-15K	Voltage Divider
R80	270KΩ	½	66-4278340	BTS-270K	Sync. Amp. Grid
R81	100KΩ	½	66-4108340	BTS-100K	Sync. Amp. Plate
R82	56KΩ 5%	½	66-3568340	BTS-56K-5%	Noise Limiter Grid
R83	240KΩ	½	66-4248340		Voltage Divider - See Note 4
R84	47KΩ 20%	½	66-3478340	BTS-47K	Series Test Socket
R85	1Meg	½	66-5108340	BTS-1Meg	Sync. Phase Inv. Grid
R86	10KΩ	½	66-3108340	BTS-10K	Sync. Phase Inv. Grid
R87	2700Ω	½	66-2728340	BTS-2700	Feedback Network
R88	8200Ω	½	66-2824340	BTA-8200	Integrator
R89	10KΩ	½	66-3108340	BTS-10K	Integrator
R90	4700	½	66-2478340	BTS-4700	Integrator
R91	180KΩ	½	66-4188340	BTS-180K	Vert. Osc. Grid
R92	15KΩ	½	66-3158340	BTS-15K	Vert. Osc. Transformer Shunt
R93	470KΩ	½	66-4748340	BTS-470K	Vert. Osc. Plate
R94	470KΩ	½	66-4748340	BTS-470K	Vert. Peaking
R95	2.2Meg	½	66-5228340	BTS-2.2Meg	Vert. Output Grid
R96	470Ω	½	66-1474340	BTA-470	Vert. Output Cathode
R97	2200Ω	2	66-2225340	BTB-2200	Vert. Output Plate Decoup
R98	33KΩ	2	66-3335340	BTB-33K	Sync. Phase Inv. Plate
R99	430KΩ 5%	½	66-4324240	BTS-430K-5%	Horiz. AFC Grid
R100	470KΩ	½	66-4748340	BTS-470K	Horizontal AFC Grid
R101	8200Ω	½	66-2828340	BTS-8200	Horizontal AFC Filter
R102	330KΩ	½	66-4334340	BTA-330K	Horizontal AFC Cathode
R103	68KΩ	1	66-3684340	BTA-68K	Horizontal AFC Plate
R104	39KΩ	½	66-3938340	BTS-39K	Voltage Divider
R105	3.3Meg	½	66-5338340	BTS-3.3Meg	Voltage Divider
R106	1Meg 20%	½	66-5104340	BTA-1Meg	Horizontal Osc. Grid - See Note 3
R107	5.6KΩ	½	66-2564340	BTA-5.6K	Horiz. Osc. Plate
R108	680Ω	½	66-2688340	BTS-680Ω	Horiz. Osc. Transformer Shunt
R109	22KΩ	½	66-3228340	BTS-22K	Horiz. Osc. Transformer Shunt
R110	120KΩ	½	66-4128340	BTS-120K	Horiz. Feedback Network
R111	22KΩ	½	66-3228340	BTS-22K	Horiz. Feedback Network
R112	1Meg 5%	½	66-5104240	BTA-1Meg-5%	Horiz. Feedback Network
R113	100Ω 20%	½	66-0108340		Parasitic Supp
R114	470KΩ	½	66-4748340	BTS-470K	Horiz. Output Grid
R115	27KΩ	½	66-3274340	BTA-27K	Horiz. Output Screen
R116	35KΩ	5	33-1335-100		Voltage Divider - Wire Wound
R117	330Ω	2	66-1335340	BTB-330	Anti-Ringing Coil Shunt - Wire Wound
R118	390Ω	2	66-1398340	BTB-390	Metering Network
R119	3300Ω	2	66-2338340	BTS-3300	Voltage Divider
R120	4.7Ω	½	66-9474390	BW-½-4.7	HV Rectifier Filament - Wire Wound
R121	10KΩ	½	66-3108340	BTS-10K	Filter
R122	.24Ω	2		BW-½-.24	Filament Dropping - Wire Wound
R123	220Ω	½	66-1228340	BTS-220	Filament Shrip - Wire Wound
R124	10Ω	½	66-0104340	BW-½-10	Filament Dropping
R125	3.3Ω	1	66-9334380	BW-1-3.3	Bias Network - Wire Wound

Note 1. Not used in all models.
Note 2. Some models use 3300Ω resistor in this application.
Note 3. Some models use 680KΩ resistor in this application.
Note 4. Some models use parallel resistors in this application.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	SEC. 1	SEC. 2	SEC. 3	REPLACEMENT DATA PHILCO PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC	550VCT	5V	6.4V	32-8452		P-3059	
	Ⓖ 2.1A	.250ADC	Ⓖ 5A	Ⓖ 1.2A				
				SEC. 4				
				5.8V				
				Ⓖ 9.4A				

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING DC RESISTANCE PRI.	SEC.	REPLACEMENT DATA PHILCO PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	NOTES
T2	195Ω	365Ω	32-8431		A-3000		Vert. Block Osc.
T3	220Ω	8.7Ω	32-8453		RVO-8		Horiz. Output
	tap 27Ω	tap 1.2Ω					
T4	640Ω	22Ω	32-8454	A-8R2 ①	A-3036 ①	T80-1 ①	Vert. Output
T5A	12Ω		32-9633	DY-7	MDF70		Hor. Deflection Yoke
B	48Ω		32-9633	DY-7			Vert. Deflection Yoke

① Drill one new mounting hole.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING IMPEDANCE SEC.	DC RES. SEC.	REPLACEMENT DATA PHILCO PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
T6	2.3KΩ	3.5Ω	200Ω .5Ω	32-8367-5	A-3825 ①	P-3018	RO-2 ① ① Drill one mounting hole.

SPEAKER

ITEM No.	RATINGS FIELD RES.	V. C. IMP.	REPLACEMENT DATA PHILCO PART No.	VIKING PART No.	QUAM PART No.	NOTES
SP1	PM	3.5Ω	36-1631	6929	69A2	
	CONE DIA.	V. C. DIA.				
SP2	6X9	1				

FILTER CHOKE

ITEM No.	RATINGS TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE @ CURRENT 1000 v-I	REPLACEMENT DATA PHILCO PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
L1	250Ω	420Ω	1.8 Henries	32-8456		C-2325 ①	C-2994 ①	TR3300 ① ① Drill one mtg. hole.
L2	.095A	540Ω	1.2 Henries	32-8455		C-2325 ①	C-2996 ①	TR3300 ①

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	SEC.	REPLACEMENT DATA PHILCO PART No.	MEISSNER PART No.	NOTES
L3	Ant. Trans.	.8Ω	.4Ω	*		* Part of antenna input assy. - see miscellaneous
L4	Ant. Trans.	.8Ω	.4Ω	*		* Part of antenna input assy. - see miscellaneous
L5	FM Trap	0Ω		*		* Part of antenna input assy. - see miscellaneous
L6	Ant. Coils	0Ω		76-5774		Includes section 4 switch wafer and coils
L7	RF Choke	.5Ω		32-4112-22		
L8	RF Choke	0Ω		62-147001011		1 1/4 turns of C12 lead wrapped around itself.
L9	RF Coils	0Ω		76-5770		Includes sect. 3 switch wafer and coils
L10	Mixer Grid Coils	0Ω		76-5772		Includes sect. 2 switch wafer and coils
L11	Osc. Coils	0Ω		76-5768		Includes sect. 1 switch wafer and coils
L12	RF Choke	.1Ω		32-4112-2		
L13	1st Video IF	.6Ω		32-4359-10		
L14	2nd Video IF	.2Ω		32-4486		
L15	Adj. Channel Video Trap	0Ω		32-4303-3		
L16	3rd Video IF	.2Ω		32-4486		
L17	Adj. Channel Sound Trap	.1Ω		32-4496		
L18	Fil. Choke	.1Ω		32-4112-15		
L19	RF Choke	.2Ω		32-4112-15		
L20	4th Video IF	.2Ω	.2Ω	32-4486-13		
L21	5th Video IF	.2Ω		32-4486		
L22	Fil. Choke	.1Ω		32-4112-15		
L23	Peaking	2.2Ω		32-4143-16		40 Microhenries
L24	Peaking	3.4Ω		32-4480-3	19-1920	100 Microhenries
L25	4.5MC Trap	2.8Ω		32-4463-5		
L26	Peaking	4.8Ω		32-4480-9	19-1921	180 Microhenries
L27	Peaking	3.8Ω		32-4480-8	19-1921	125 Microhenries
L28	Peaking	3.5Ω		32-4480-3	19-1920	100 Microhenries
L29	Sound IF Ratio Det.	5.5Ω		32-4469A		
L30	Trans.	5.5Ω	.7Ω	32-4450		
L31	Fil. Choke	.1Ω		32-4112-15		
L32	Hor. Osc. Trans.	86Ω	48Ω	32-4470-1		
L33	Anti-Ringing Coil	8Ω		32-4143-14		250 Microhenries
L34	Horiz. Lin.	12Ω		32-4468-2		
L35	Width Coil	4.4Ω		32-4468-1		

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA PHILCO PART No.	NOTES
M1	Bayonet	6-8	.15	Brown	34-2068	Type #47

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA PHILCO PART No. FUSE	HOLDER	LITTLE FUSE PART No. FUSE	HOLDER	REMARKS
M2	3AG	.600A	45-2656-18	76-4519-2	313.600	357001	

MISCELLANEOUS

ITEM No.	PART NAME	PHILCO PART No.	NOTES
M3	Fuse		Length of #26 Copper Wire
M4	Fuse		Length of #30 Copper Wire
M5	RF Tuner	76-5747	Complete
M6	Focus Magnet	76-6126	
M7	Ion Trap	76-3913-2	
	Ant. Input Assembly	76-6220	Includes L3, L4, L5, R6, C8
	Safety Glass	54-7943-20	
	Knob	76-6175	Channel Selector Models 51-T1443PM, 51-T1443PW
	Knob	76-6175-1	Channel Selector Models 51-T1443PL
	Knob	76-6104	Fine Tuning
	Knob	54-4769	Contrast Models 51-T1443PM, 51-T1443PW
	Knob	54-4769-1	Contrast Model 51-T1443PL
	Knob	54-4799-1	Brightness Models 51-T1443PM, 51-T1443PW

PHILCO MODELS 51-T1443PM, PL, PW

TV PARTS LIST AND DESCRIPTIONS (Continued)

MISCELLANEOUS

ITEM No.	PART NAME	PHILCO PART No.	NOTES
	Knob	54-4799-2	Brightness Model 51-T1443PL
	Knob	54-4769	Horiz. Hold Models 51-T1443PM, 51-T1443PW
	Knob	54-4769-1	Horiz. Hold Model 51-T1443PL
	Knob	54-4799-1	Vert. Hold Models 51-T1443PM, 51-T1443PW
	Knob	54-4799-2	Vert. Hold Models 51-T1443PL
	Knob	54-4817-1	Volume Models 51-T1443PM, 51-T1443PW
	Knob	54-4817-3	Volume Models 51-T1443PL
	Knob	76-5497-2	Tone Models 51-T1443PM, 51-T1443PW
	Knob	76-5497-3	Tone Model 51-T1443PL
	Knob	54-4750	Antenna Models 51-T1443PM, 51-R1443PW
	Knob	54-4750-3	Antenna Models 51-T1443PL

PHONO CARTRIDGE and NEEDLE

ITEM No.	REPLACEMENT DATA				REMARKS
	PHILCO PART No.	ASTATIC PART No.		SHURE PART No.	
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M8	76-4649					

RADIO PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		PHILCO PART No.	STANDARD REPLACEMENT		
V23	Converter	7A8	7A8	8U	
V24	IF Amp.	7B7	7B7	8V	
V25	Det.-AVC-AF Amp.	7B6	7B6	8W	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	PHILCO PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	
C98	220		62-122001001	SI220	D6-221	5W5T2	GP2K-220	19C13	RF Coupling
C99	47	500	60-00475417	1468-00005	D6-470	5W5Q5	GP1K-47	1FM-45	Osc. Grid Cap
C100	.047	200	45-3505-28	P288-047	DF-503	PTE4S5		2TM-S47	AVC Filter
C101	.047	400	45-3505-28	P488-047	DF-503	PTE4S5		4TM-S47	Decoupling
C102	.047	400	45-3505-28	P488-047	DF-503	PTE4S5		4TM-S47	Decoupling
C103	.022	200	45-3505-60	P488-022	DF-203	PTE4S2		4TM-S22	Tone Comp.
C104	.0047	600	45-3505-56	P688-0047	D6-472	PTE6D5	GP2M-0047	6TM-D47	Audio Coupling
C105	.0047	600	45-3505-56	P688-0047	D6-472	PTE6D5	GP2M-0047	6TM-D47	Audio Coupling

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	PHILCO PART No.	IRC PART No.	
R126	1Meg		66-5108340		Converter Grid
R127	100KΩ		66-4108340		Osc. Grid
R128	2.2Meg		66-5228340	BTS-2.2Meg	AVC Network
R129	470KΩ		66-4748340	BTS-470K	AVC Network
R130	27KΩ		66-3278340	BTS-27K	Decoup
R131	6500Ω	5	33-1335-99		Decoup - Wire Wound
R132	47KΩ		66-3478340	BTS-47K	Diode Filter
R133	10Meg		66-6108340	BTS-10Meg	AF Amp. Grid
R134	220KΩ		66-4228340	BTS-220K	AF Amp. Plate
R135	47KΩ		66-3478340	BTS-476	Phono Input Shunt
R136	.68Ω	2	66-8684340	BW-2-.68	Filament Dropping - Wire Wound
R137	6.8Ω	½	66-9685360	BW-½-6.8	Series Bin Light - Wire Wound

R F COILS

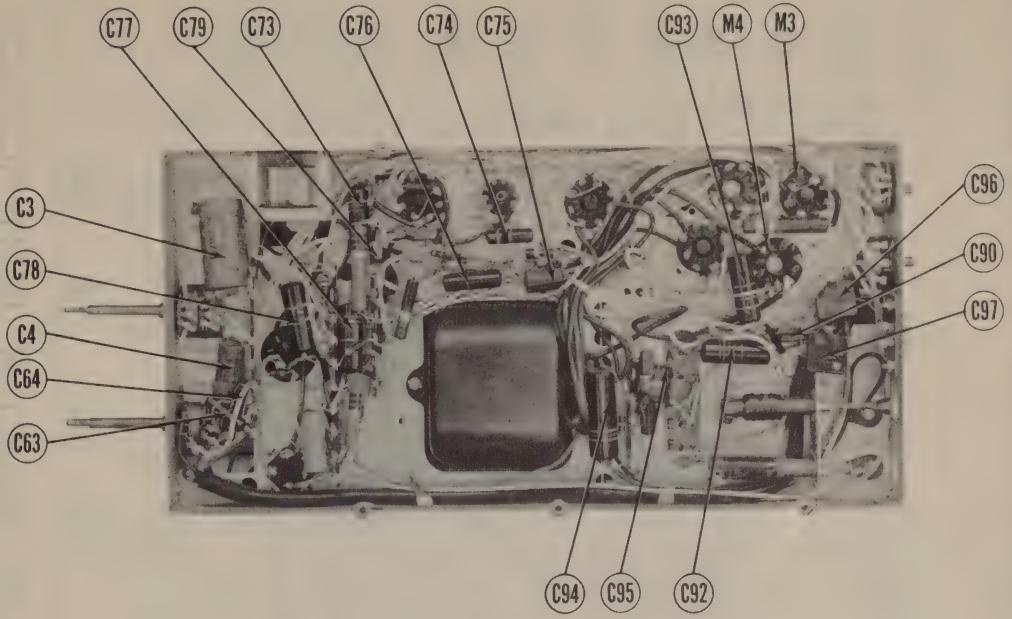
ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	PHILCO PART No.	MEISSNER PART No.	
L36	Loop Ant.					One turn around cabinet
L37	Ant. Coil	2.7		32-4413-2		
L38	Osc. Coil	2.7Ω	7Ω	32-4263	14-1073	
L39	1st IF	13Ω	13Ω	32-4160A		
L40	2nd IF	16Ω	16Ω	32-4240A		

DIAL LIGHTS

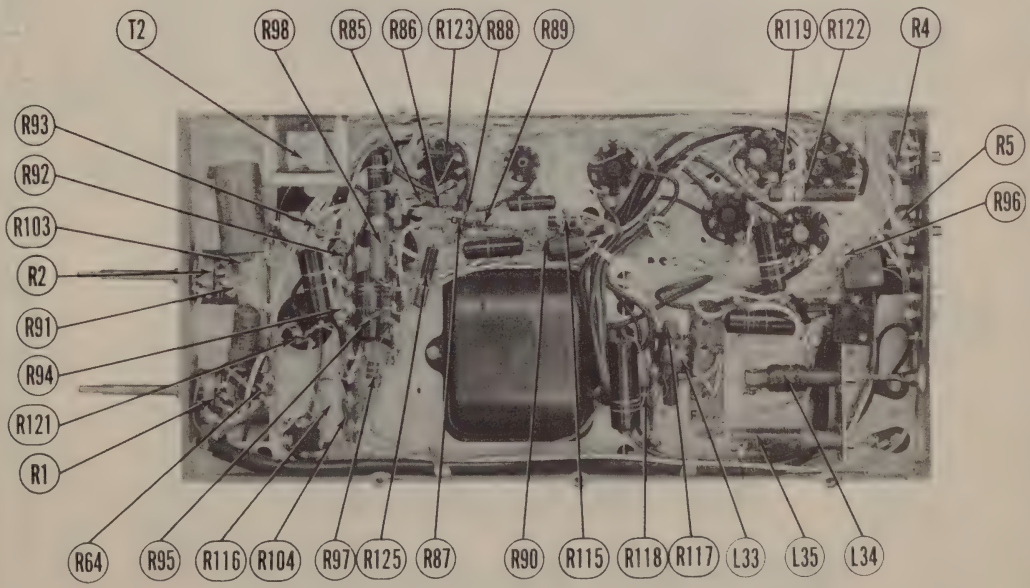
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					PHILCO PART No.		
M9	Bayonet	6-8	.25	Brown	34-2064		Type #44 Phono Compartment Light
M10	Bayonet	6-8	.15	Blue	34-2068		Type #47 Dial Light

MISCELLANEOUS

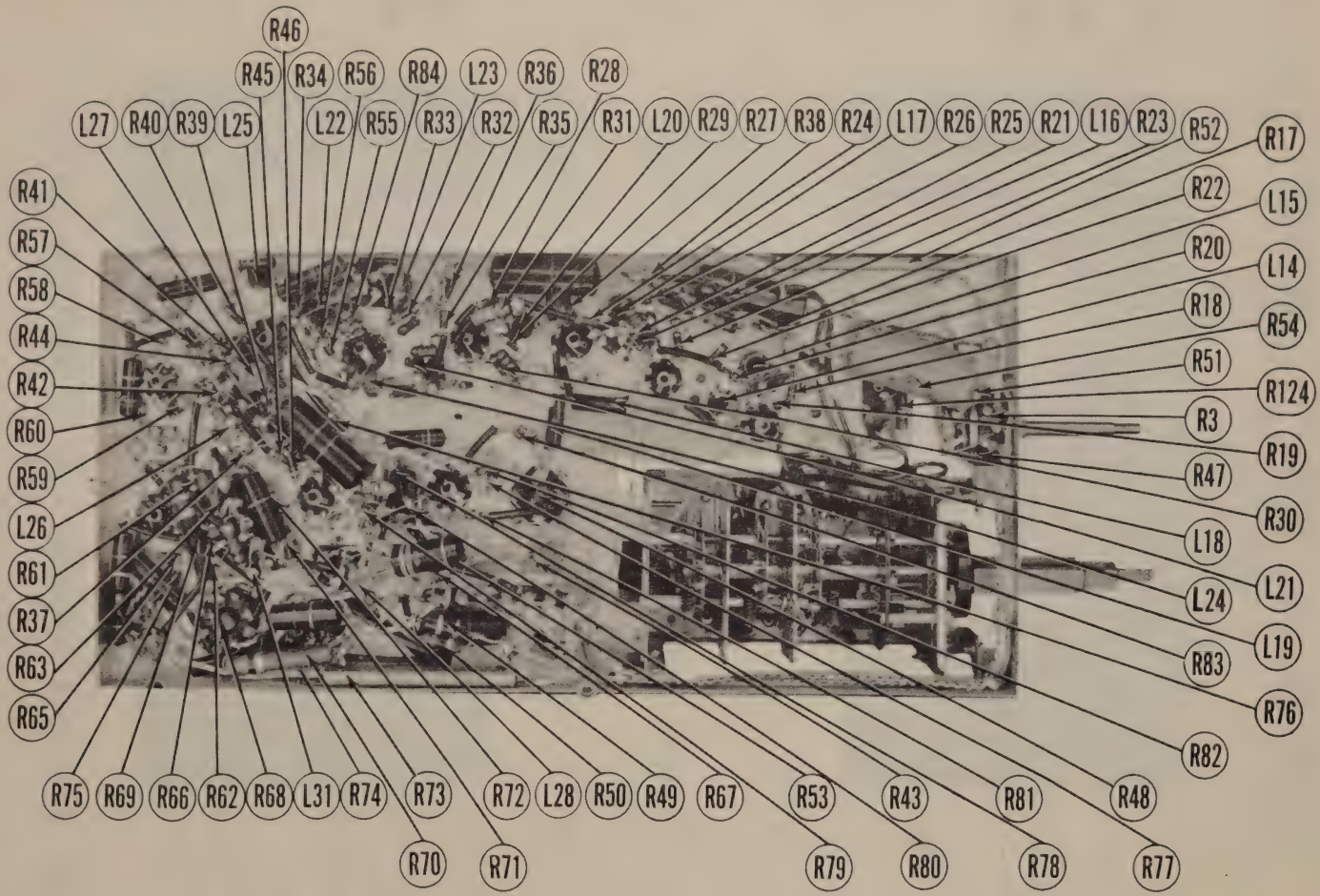
ITEM No.	PART NAME	PHILCO PART No.	NOTES
M11	Switch	42-1947	Function TV-AM-Phono
M12	Tuning Capacitor	31-2751-9	33-542MMF, 29-216MMF
	Dial Scale	54-5109	
	Panel	54-8171-2	Diffusing
	Pointer	56-5630-32FCP	Tuning
	Knob	54-4798-6	Function Switch Models 51-T1443PM, 51-T1443PW
	Knob	54-4798-7	Function Switch Model 51-T1443PL
	Knob	54-4798-2	Tuning Models 51-T1443PM, 51-T1443PW
	Knob	54-4798-3	Tuning Model 51-T1443PL



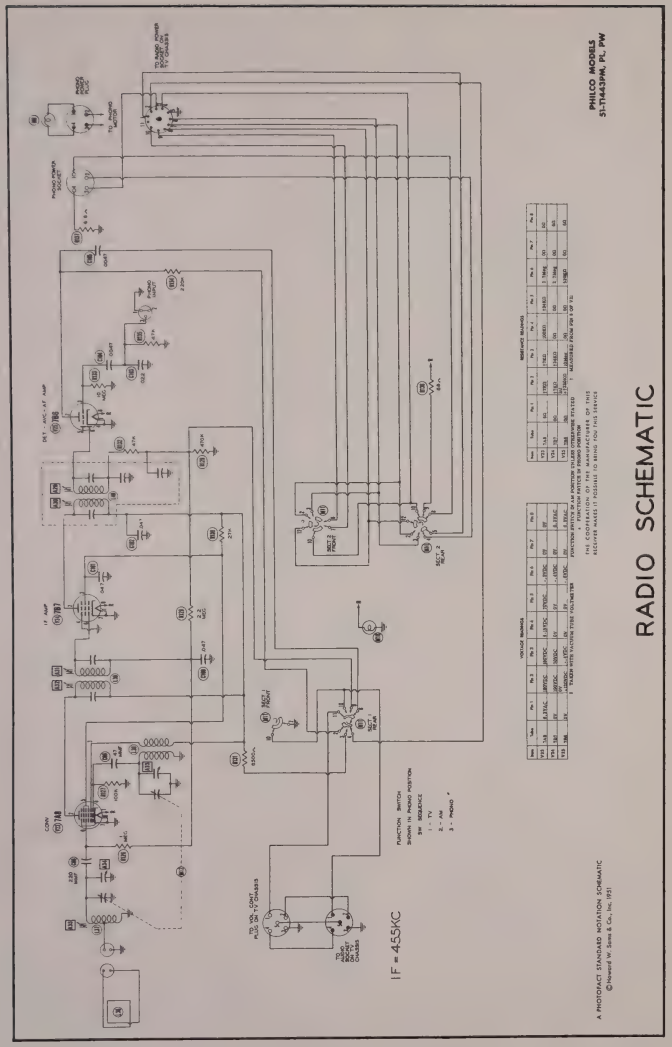
SWEEP CHASSIS-CAPACITOR IDENTIFICATION

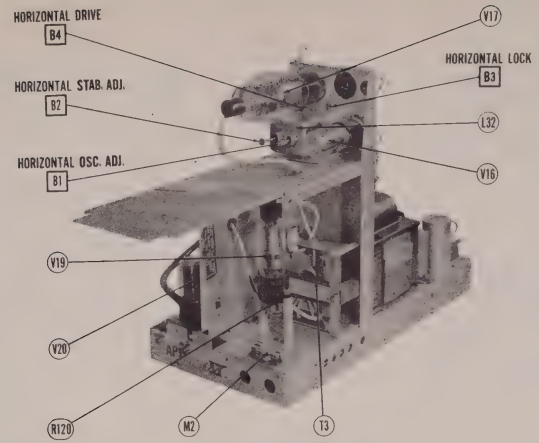


SWEEP CHASSIS-RESISTOR IDENTIFICATION



RF-IF CHASSIS-BOTTOM VIEW- RESISTOR AND INDUCTOR IDENTIFICATION





SWEEP CHASSIS – TOP VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Pre-set the adjustments as follows.

Horizontal lock trimmer (B3) one turn counter-clockwise from maximum clockwise.

Horizontal stabilizing core (B2) 5/8 inch out of the can.

Horizontal hold control to mid-position of its range.

Turn the set on and tune in a TV station, preferably a test pattern.

Adjust the horizontal frequency slug (B1) until the picture synchronizes horizontally.

Connect an oscilloscope to pin 3 of the horizontal test socket.

Adjust the stabilizing core (B2) until the broad and narrow peaks of the waveform are of equal height as shown in figure 4. If necessary adjust B1 to keep the picture in sychronization during adjustment of B2.

Remove the oscilloscope and turn the hold control to maximum clockwise.

Adjust B1 until the picture shows 4 bars sloping downward to the right.

Turn the hold control to maximum counter-clockwise, and then slowly clockwise.

Carefully note the least number of sloping bars present just before the picture synchronizes.

If there are more than 3 1/2 bars, turn B3 slightly clockwise, if less than 2 1/2 bars are present adjust B3 slightly counter-clockwise.

Repeat the check and adjustment of B3 until 2 1/2 to 3 1/2 bars are present at the pull in point. If the receiver will not lose sync. with the hold control at maximum clockwise, momentarily interrupt the signal switching to another channel and back again.

Turn the hold control to maximum clockwise and adjust B1 until 4 sloping bars are present.

Turn the horizontal drive trimmer (B4) counter-clockwise from maximum clockwise as far as possible without excessive reduction of picture size, poor horizontal linearity, or black lines in the picture.

Adjust the width slug (B5) until the picture fills the mask horizontally.

Adjust the horizontal linearity slug (B6) until the picture is symmetrical from left to right.

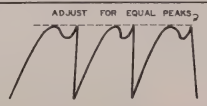


FIG. 4

PHOTOFACT* Folder

RAYTHEON MODELS
C-1401, M-1402, M-1403, M-1404
(CH. 14AX21)

IMPORTANT FILING NOTICE

The contents for this envelope will be found among the last folders in this complete set of folders . . . *unless* it has been purchased as part of a *complete* volume of PHOTOFACTS assembled in a DeLuxe Binder.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.

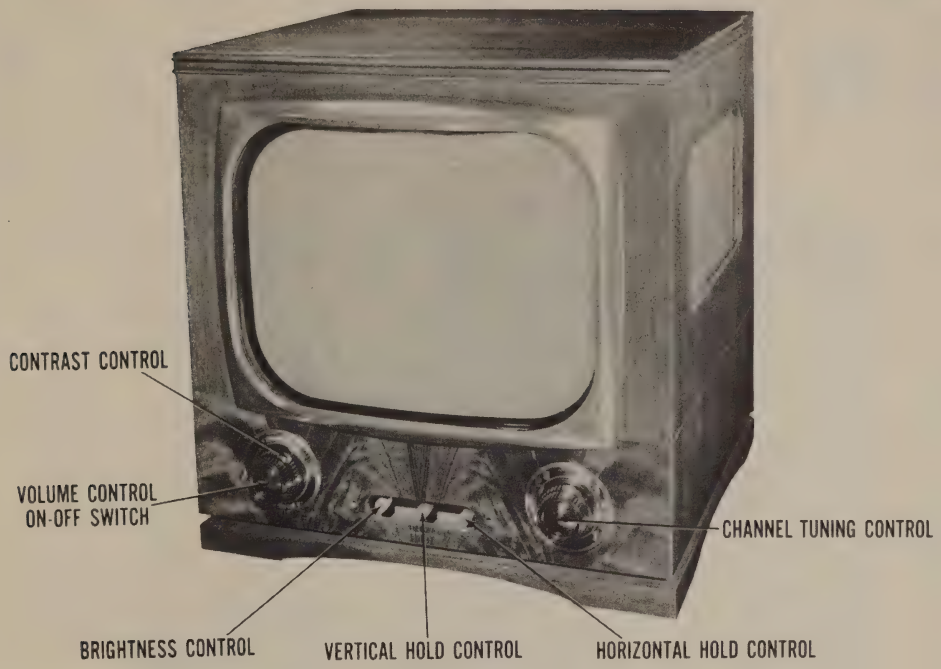
MODEL M-1402

RAYTHEON MODELS
C-1401, M-1402, M-1403, M-1404
(CH. 14AX21)

HOWARD W. SAMS & CO., INC. • Indianapolis, Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1951 by Howard W. Sams & Co., Inc., Indianapolis, Indiana, U.S.A. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc."
Printed in U. S. of America

Date 1/51 Set No. 123—Folder No. 12



RAYTHEON MODELS C-1401, M-1402, M-1403, M-1404 (Ch. 14AX21)

RAYTHEON MODEL M-1402

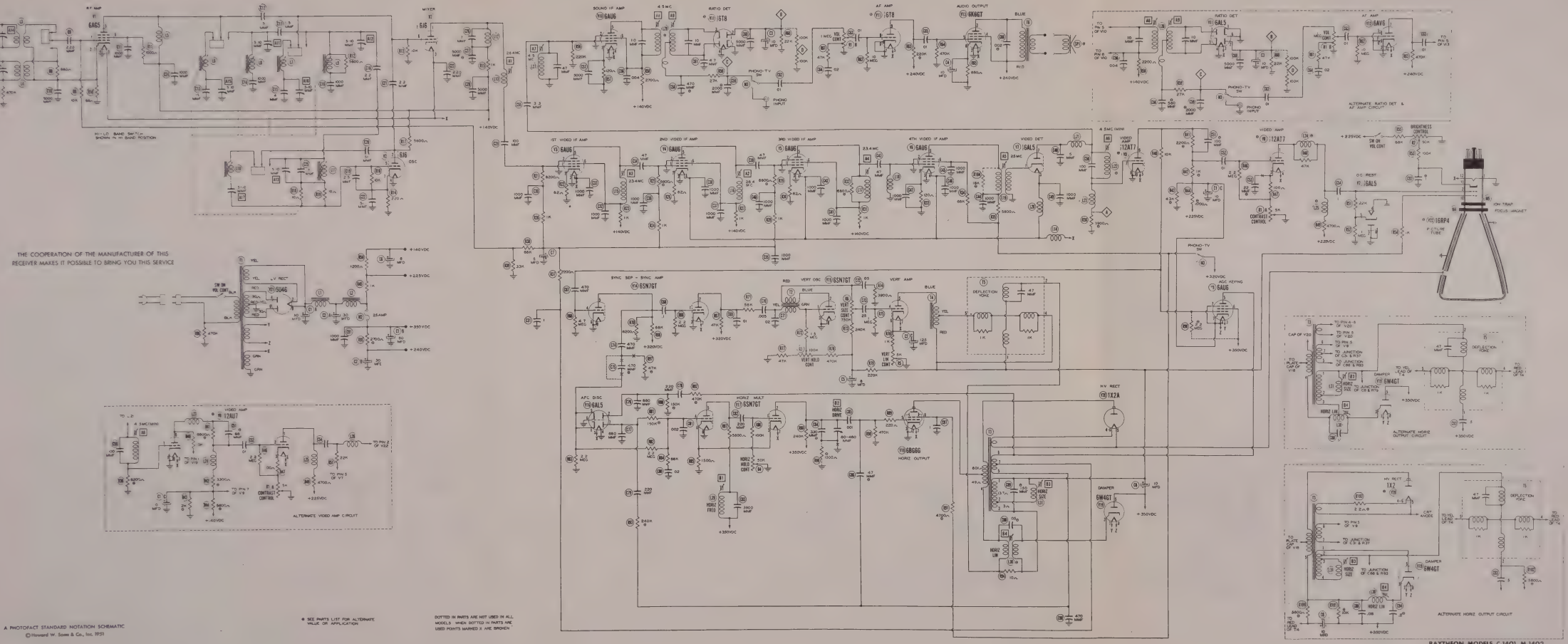
TRADE NAME	Raytheon Models C-1401, M-1402, M-1403, M-1404 (Ch. 14AX 21)
MANUFACTURER	Belmont Radio Corp., 5921 W. Dickens Ave., Chicago, 39, Illinois
TYPE SET	Television Receiver
TUBES	Twenty Two
POWER SUPPLY	110-120 Volts AC-60 Cycle
RATING	2 Amp. @ 117 Volts AC
TUNING RANGE—Channels 2 thru 13	

INDEX

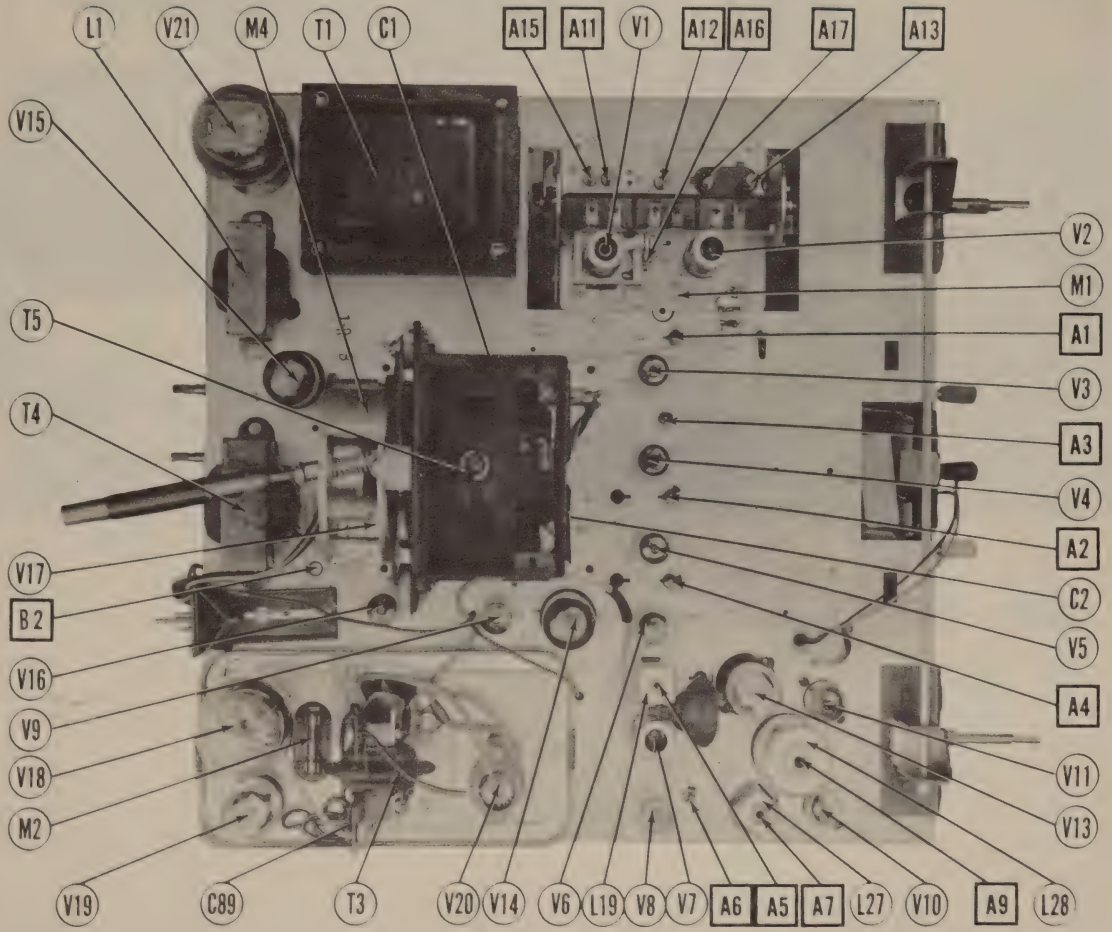
Alignment Instructions 6, 7
Horizontal Sweep Circuit Adjustment 10
Parts List And Desciption 12, 13, 15
Photographs
Cabinet - Rear View 10
Capacitor And Alignment Identification 4, 9
Chassis - Top View 3
Photographs (Continued)
RF Tuner 7
Resistor And Inductor Identification 11, 14
Schematic 2
Tube Placement Chart 5
Voltage And Resistance Measurements 8

HOWARD W. SAMS & CO., INC. • Indianapolis 1, Indiana

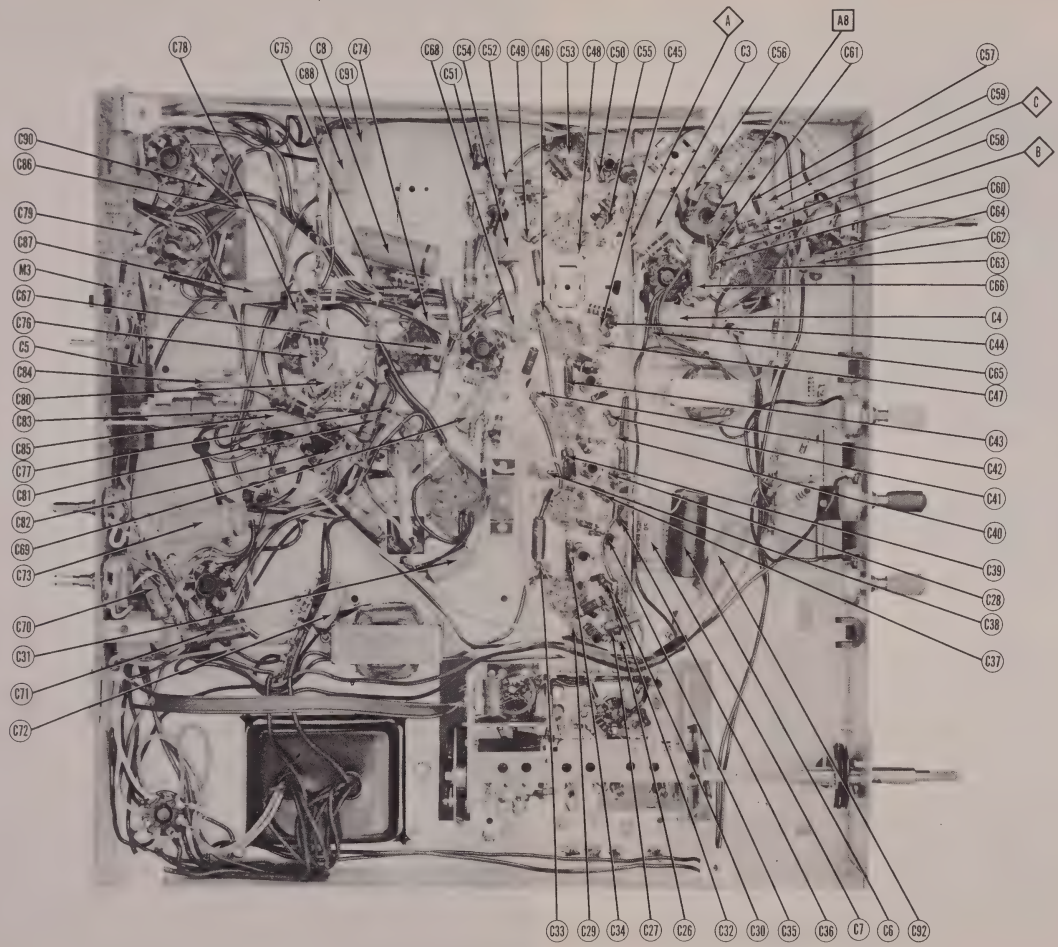
"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1951 by Howard W. Sams & Co., Inc., Indianapolis, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America


THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE
ALTERNATE VIDEO AMP CIRCUIT
ALTERNATE RATIO DET & AF AMP CIRCUIT
ALTERNATE HORIZ OUTPUT CIRCUIT
ALTERNATE HORIZ OUTPUT CIRCUIT
HI-LO BAND SWITCH SHOWN IN HI BAND POSITION
A PHOTOFACT STANDARD NOTATION SCHEMATIC
© Howard W. Sams & Co., Inc. 1951
* SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DOTTED IN PARTS ARE NOT USED IN ALL MODELS WHEN DOTTED IN PARTS ARE USED POINTS MARKED X ARE BROKEN

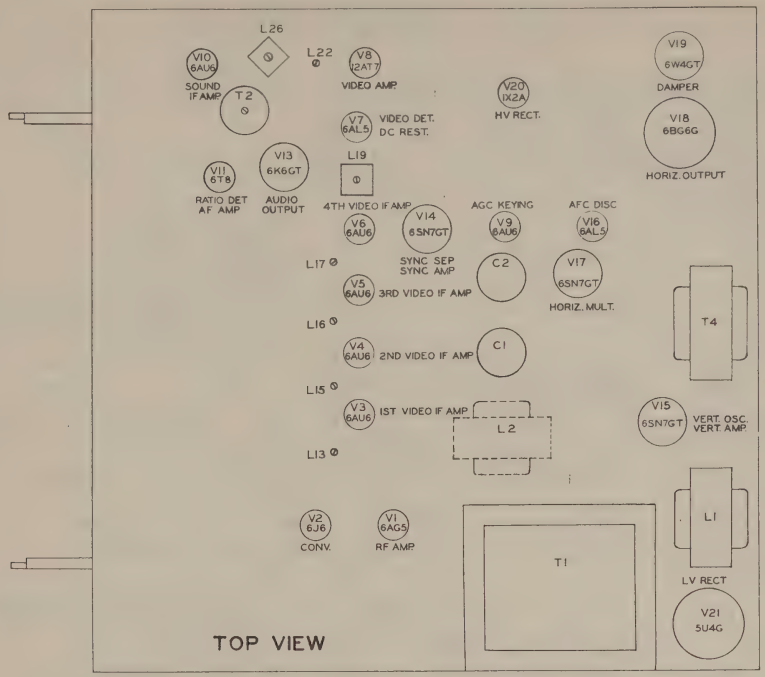
RAYTHEON MODELS C-1401, M-1402,
M-1403, M-1404 (Ch. 14AX21)

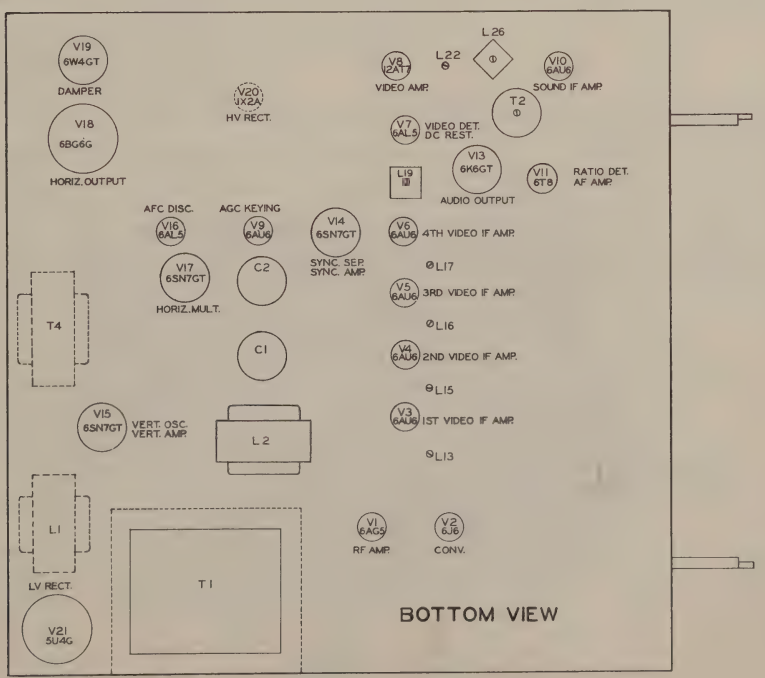


CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW- CAPACITOR AND ALIGNMENT IDENTIFICATION





TUBE PLACEMENT CHART

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The end of the high voltage lead should be securely taped and kept away from the chassis. Do not remove the horizontal oscillator tube to kill the high voltage.

VIDEO IF ALIGNMENT

Remove the converter tube (V2) from its socket and replace it with a 6J6 which has pin 2 removed.
Connect the negative lead of a 3 volt battery to the junction of R20 and C7, connect the positive lead to chassis.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Direct	High side to ungrounded tube shield floating over dummy converter tube (V2). Low side to chassis.	Not used	26.4MC	Any	Use VTVM. DC Probe to Point (A). Common to chassis.	A1, A2	Adjust for maximum deflection.
2.	Direct	"	"	23.4MC	"	"	A3, A4	"
3.	Direct	"	"	25MC	"	"	A5	"
4.	Direct	"	25MC (10MC SWP)	23.0MC 26.75MC	"	Vert. Amp. to Point (A). Low side to chassis.	A5	Adjust for maximum deflection. Check for response curve similar to figure 1. If necessary retouch A5 for proper response.

4.5MC TRAP ADJUSTMENT

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
5.	.001MFD	High side to pin 1 (cathode) of 6AL5 (V7). Low side to chassis.	Not used	4.5MC (400∿ Mod.)	Any	Vert. Amp. to pin 1 (plate) of 12AT7 (V8). Low side to chassis.	A6	Adjust for MINIMUM 400∿ indication on scope.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100KΩ (± 1%) resistors in series from Point B to chassis. The junction of these two resistors is alignment Point D as shown on the schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
6.	.001MFD	High side to pin 1 (cathode) of 6AL5 (V7). Low side to chassis.	4.5MC (Unmod.)	Any	DC Probe to Point (B). Common to chassis.	A7, A8	Adjust for maximum deflection.
7.	.001MFD	"	"	"	DC Probe to Point (C). Common to Point (D).	A9	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
6.	.001MFD	High side to pin 1 (cathode) of 6AL5 (V7). Low side to chassis.	4.5MC (450KC SWP)	4.5MC	Any	Vert. Amp. to Point (B). Low side to chassis.	A7, A8	Disconnect stabilizer capacitor C3. Adjust for maximum amplitude and symmetry as per figure 2.
7.	.001MFD	"	"	"	"	Vert. Amp. to Point (C) Low side to chassis.	A9	Reconnect capacitor C3. Adjust A9 so 4.5MC occurs at center of crossover lines as per figure 3. SLIGHTLY retouch A8 for maximum amplitude and straightness of crossover lines.

TUNER ALIGNMENT

Pre-set the adjusting screws as shown in figure 5.
Turn the tuning shaft until the tuning core carriage is at the top of its stroke.
Pre-set all tuning cores 1.6 inches from the top of the core to the coil mounting strip. Then turn the low band oscillator core (L11) an additional 4 turns out of the coil.
Remove the dummy converter tube and replace the original 6J6 in its socket.

LOW BAND TUNER ALIGNMENT

Turn the tuning control until the cores are at the extreme top of their stroke with the switch in "low band" position.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8.	Two 120Ω carbon res.	Across antenna terminals with 120Ω in each lead.	85MC (10MC SWP)	83.25MC 87.25MC	6	Vert. Amp. to Point (A). Low side to chassis.	A10, A11, A12	Adjust for maximum amplitude of response with symmetrical peaks. If A-11 shows insufficient range turn L8 core slightly into the coil.
9.	"	"	"	"	"	"	A13	Adjust to place video marker at 50% on response curve as per figure 4. If necessary repeat step 8.
10.	"	"	63MC (10MC SWP)	61.25MC 65.75MC	3	"	A11, A12	Adjust tuning control until video marker appears at 50% on response curve. Adjust A11 and A12 for compromise which will give best overall response across the low band channels.
			69MC (10MC SWP)	67.25MC 71.75MC	4			
			79MC (10MC SWP)	77.25MC 81.75MC	5			
			57MC (10MC SWP)	55.25MC 59.75MC	2			

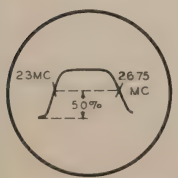


FIG. 1

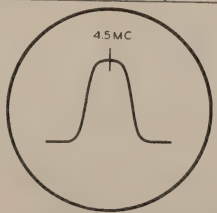


FIG. 2

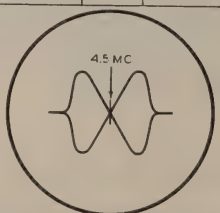


FIG. 3

FIG. 4

ALIGNMENT INSTRUCTIONS (CONT.)

HIGH BAND TUNER ALIGNMENT

Turn the tuning control until the cores are at the extreme top of their stroke with the switch to "high band" position.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
11.	Two 120Ω carbon res.	Across antenna terminals with 120Ω in each lead.	213MC (10MC SWP)	211.25MC 215.75MC	13	Vert. Amp. to Point ⚠. Low side to chassis.	A14, A15, A16	Adjust for maximum amplitude of response with symmetrical peaks.
12.	"	"	"	"	"	"	A17	Adjust to place video marker at 50% on response curve as per figure 4. If necessary repeat step 11.
13.	"	"	207MC (10MC SWP)	205.25MC 209.75MC	12	"	A15, A16	Adjust tuning control to place video marker at 50% on response curve. Adjust A15 and A16 for compromise which will give best overall response across the high band channels.
			201MC (10MC SWP)	199.25MC 203.75MC	11			
			195MC (10MC SWP)	193.25MC 197.75MC	10			
			189MC (10MC SWP)	187.25MC 191.75MC	9			
			183MC (10MC SWP)	181.25MC 185.75MC	8			
			177MC (10MC SWP)	175.25MC 179.75MC	7			

The dimensions shown are approx. from the shoulder of screw head to mounting base

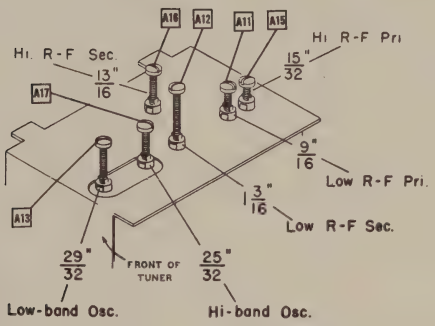
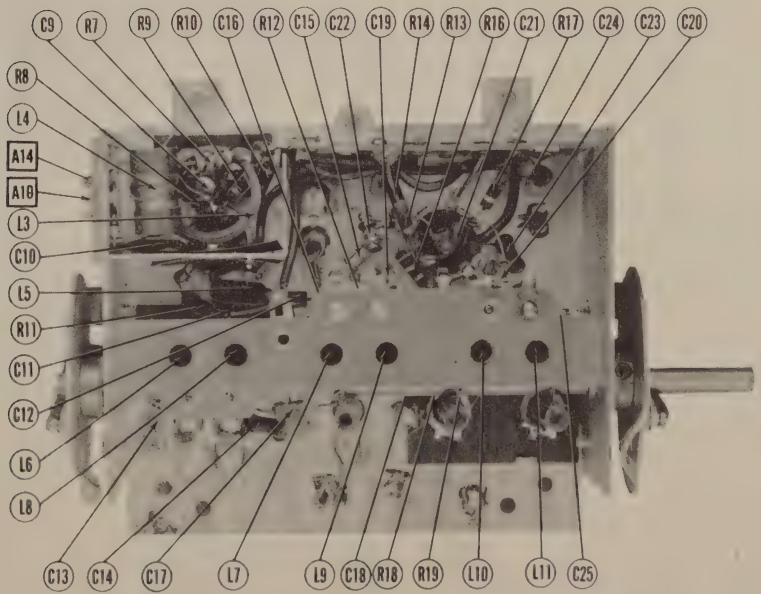


FIG.5



RF TUNER-BOTTOM VIEW

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AG5	0V	.6VDC	6.3VAC	0V	135VDC	130VDC	.6VDC		
V 2	6J6	130VDC	80VDC	6.3VAC	0V	§-1VDC	0V	2.8VDC		
V 3	6AU6	0V	0V	0V	6.3VAC	130VDC	130VDC	1VDC		
V 4	6AU6	0V	0V	0V	6.3VAC	130VDC	130VDC	1VDC		
V 5	6AU6	0V	0V	0V	6.3VAC	130VDC	130VDC	1VDC		
V 6	6AU6	0V	0V	0V	6.3VAC	285VDC	135VDC	1.2VDC		
V 7	6AL5	0V	0V	5.7VDC	0V	1.4VDC	0V	-3.8VDC		
V 8	12AT7	140VDC	.5VDC	40VDC	6.3VAC	6.3VAC	125VDC	-.4VDC	0V	0V
V 9	6AU6	125VDC	155VDC	¶ 155VDC	¶ 155VDC	•	320VDC	155VDC		
V 10	6AU6	0V	0V	0V	6.3VAC	115VDC	115VDC	1VDC		
V 11	6T8	-.2VDC	-.4VDC	-.2VDC	0V	6.3VAC	0V	0V	-.4VDC	80VDC
V 12	6AV6	NOT USED IN ALL MODELS								
V 13	6K6GT	0V	0V	230VDC	240VDC	0V	0V	6.3VAC	18VDC	
V 14	6SN7GT	-1.5VDC	70VDC	0V	-1.6VDC	35VDC	0V	6.3VAC	0V	
V 15	6SN7GT	-2.6VDC -7.3VDC	105VDC	0V	0V	430VDC	25VDC 15VDC	6.3VAC	0V	
V 16	6AL5	2.6VDC	-.3VDC	6.3VAC	0V	2.6VDC	0V	-.2VDC		
V 17	6SN7GT	-4VDC -5.6VDC	115VDC	12VDC	-.1VDC	290VDC	12VDC	6.3VAC	0V	
V 18	6BG6G	-.2VDC	0V	0V	-.4VDC	-18VDC	-18VDC	6.3VAC	270VDC	TOP CAP •
V 19	6W4GT	440VDC	•	440VDC	•	320VDC	•	¶	155VDC	155VDC
V 20	1X2A	• DO NOT MEASURE								
V 21	5U4G	0V	340VDC	▲	340VAC	▲	340VAC	320VDC	340VDC	
V 22	16RP4	0V	1.2VDC	PIN 10 430VDC	PIN 95VDC	11 0V	PIN 12 6.3VAC			

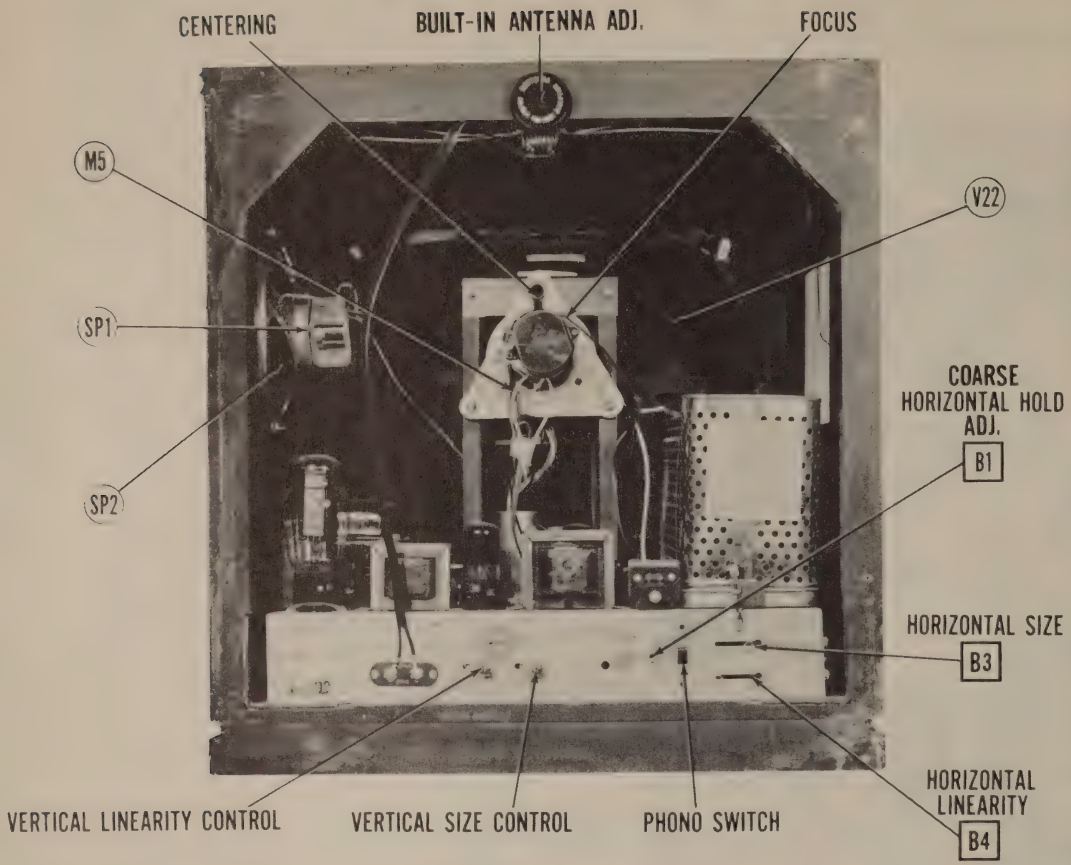
§ TAKEN WITH VACUUM TUBE VOLTMETER
• DO NOT MEASURE
▲ 117VAC MEASURED ACROSS PINS 3 AND 5 OF V21
¶ 6.3VAC MEASURED ACROSS FILAMENTS
PHONO-TV SWITCH IN TV POSITION

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AG5	43KΩ	68Ω	.1Ω	0Ω	†2.3KΩ	†3.3KΩ	68Ω		
V 2	6J6	†3.3KΩ	†7.9KΩ	.1Ω	0Ω	10KΩ	10KΩ	220Ω		
V 3	6AU6	90KΩ	0Ω	0Ω	.1Ω	†3.3KΩ	†3.3KΩ	82Ω		
V 4	6AU6	90KΩ	0Ω	0Ω	.1Ω	†3.3KΩ	†3.3KΩ	82Ω		
V 5	6AU6	90KΩ	0Ω	0Ω	.1Ω	†3.3KΩ	†3.3KΩ	82Ω		
V 6	6AU6	2.3KΩ	0Ω	0Ω	.1Ω	†5.7KΩ	†68KΩ	120Ω		
V 7	6AL5	.9Ω	0Ω	1.2Ω	0Ω	1 Meg.	0Ω	3.9KΩ		
V 8	12AT7	†5.8KΩ	2.2 Meg.	5.1KΩ	.1Ω	.1Ω	†9KΩ	3.9KΩ	0Ω	0Ω
V 9	6AU6	†20KΩ	†5.8KΩ	†5.8KΩ	†5.8KΩ	90KΩ	†70Ω	†5.8KΩ		
V 10	6AU6	3.1Ω	0Ω	0Ω	.1Ω	†4.5KΩ	†4.5KΩ	120Ω		
V 11	6T8	Inf.	22KΩ	Inf.	0Ω	.1Ω	0Ω	0Ω	10 Meg.	†220KΩ
V 12	6AV6	NOT USED IN ALL MODELS.								
V 13	6K6GT	Inf.	0Ω	†3.3KΩ	†2.8KΩ	470KΩ	Inf.	.1Ω	680Ω	
V 14	6SN7GT	2.2 Meg.	†47KΩ	0Ω	4.7 Meg.	†30KΩ	0Ω	.1Ω	0Ω	
V 15	6SN7GT	1.5 Meg. 1.6 Meg.	#1.1 Meg.	0Ω	1 Meg.	#800Ω	6KΩ 1KΩ	.1Ω	0Ω	
V 16	6AL5	2.2 Meg.	150KΩ	.1Ω	0Ω	2.2 Meg.	0Ω	4.5 Meg.		
V 17	6SN7GT	100KΩ 150KΩ	†220KΩ	1.5KΩ	4.4 Meg.	†5.8KΩ	1.5KΩ	.1Ω	0Ω	
V 18	6BG6G	4.5 Meg.	0Ω	0Ω	340KΩ	470KΩ	470KΩ	.1Ω	†4.8KΩ	TOP CAP #60Ω
V 19	6W4GT	#8Ω	90KΩ	400KΩ	550KΩ	†70Ω	90KΩ	†5.8KΩ	†5.8KΩ	
V 20	1X2A	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	TOP CAP #660Ω
V 21	5U4G	Inf.	35KΩ	470KΩ	30Ω	470KΩ	30Ω	†70Ω	35KΩ	
V 22	16RP4	0Ω	1 Meg.	PIN 10 #1KΩ	PIN 100KΩ	11 150KΩ	PIN 12 .1Ω			

† MEASURED FROM PIN 8 OF V21
# MEASURED FROM PIN 3 OF V19
PHONO-TV SWITCH IN TV POSITION

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1,000 ohms.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panels controls set at minimum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.



CABINET–REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

Turn the horizontal hold control to the mid-position of its range.

Adjust the horizontal frequency slug (B1) until the picture synchronizes horizontally.

Adjust the horizontal drive trimmer (B2) counter clockwise until vertical white lines appear in the picture, and then clockwise 1/2 turn farther than required to just remove the white lines.

Adjust the horizontal size slug until the picture fills the tube horizontally.

Adjust the horizontal linearity slug until the picture is symmetrical from left to right.

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: RAYTHEON PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	RF Amp.	6AG5	6AG5	7BD	
V2	Converter	6J6	6J6	7BF	
V3	1st Video IF Amp.	6AU6	6AU6	7BK	
V4	2nd Video IF Amp.	6AU6	6AU6	7BK	
V5	3rd Video IF Amp.	6AU6	6AU6	7BK	
V6	4th Video IF Amp.	6AU6	6AU6	7BK	
V7	Video Det. -DC Restorer	6AL5	6AL5	6BT	
V8	Video Amp.	12AT7	12AT7	9A	
V9	AGC Keying	6AU6	6AU6	7BK	
V10	Sound IF Amp.	6AU6	6AU6	7BK	
V11A	Ratio Det. -AF Amp.	6T8	6T8	9E	
B	Ratio Det.	6AL5	6AL5	6BT	
V12	AF Amp.	6AV6	6AV6	7BT	Not used in models using V11A.
V13	Audio Output	6K6GT	6K6GT	7S	
V14	Sync. Sep. - Sync. Amplifier	6SN7GT	6SN7GT	8BD	
V15	Vert. Osc. -Vert. Amp.	6SN7GT	6SN7GT	8BD	
V16	AFC Discr.	6AL5	6AL5	6BT	
V17	Horiz. Mult.	6SN7GT	6SN7GT	8BD	
V18	Horiz. Output	6BG6G	6BG6G	5BT	
V19	Damper	6W4GT	6W4GT	4CG	
V20A	H.V. Rectifier	1X2A	1X2A	7CB	
B	H.V. Rectifier	1X2	1X2	7CB	
V21	L.V. Rectifier	5U4G	5U4G	5T	
V22A	Picture Tube	16RP4	16RP4	12D	See chart at end of parts list.
B	Picture Tube	16TP4	16TP4	12D	See chart at end of parts list.

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: RAYTHEON PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	30	450	A-8C-17845	AFH3666J		UPT36145		TVL-3790	▲ Filter
B	60	480							■ Filter
C	10	450							▲ Decoupling
C2A	30	450	A-8C-18487	AF66J4A		UPT409		TVL-3706	▲ Filter
B	30	450		PRS25/100					■ Filter
C	125	25							▲ Vert. Output Cath.
C3	10	50	A-8C-17183	PRS50/10		BR105		TVA-1304	Stabilizing Cap.
C4	10	50	A-8C-17183	PRS50/10		BR105		TVA-1304	Output Cath. Bypass
C5	8	450	A-8C-13453	PRS450/8		BR845A		TVA-1704	Decoupling
C6	8	450	A-8C-13453	PRS450/8		BR845A		TVA-1704	Decoupling
C7	5	50	B-8C-19424	PRS150/4		BR105		TVA-1303	AGC Filter
C8	10	150	A-8C-11495	PRS150/12		BR1015		TVA-1406	Decoupling
C9	220		C-8G-16045	SI220	D6-221		GP2K-220	19C13	RF Coupling
C10	5000		A-8G-13962	BPD-005	DD-502		811-005	29C1	RF Amp. Cathode
C11	1000		C-8G-13201	SI1000	D6-102		GP2L-001	19C1	RF Amp. Screen
C12	.5		A-8G-12495-7		TCZ-.5				RF Coupling
C13	15		C-8G-17305		TCZ-15		NPOK-15	19C5	Fixed Trimmer
C14	1000		C-8G-13201	SI1000	D6-102		GP2L-001	19C1	RF Bypass
C15	4		C-8G-11893				NPOK-4		Fixed Trimmer
C16	1000		C-8G-13201	SI1000	D6-102		GP2L-001	19C1	RF Bypass
C17	1.5		A-8G-12495-4	SI1.5NPO	TCZ-1.5		NPOK-1.5		RF Coupling
C18	2.2		A-8G-12495-4		TCZ-2.2				Osc. Coupling
C19	2.5		C-8G-15737						Osc. Grid Cap
C20	51		A-8G-11891	SI50N750	TCN-51		N750L-51		Osc. Feedback
C21	2.2		A-8G-12495-4		TCZ-2.2				Osc. Coupling
C22	51		A-8G-11891	SI50	TCN-51		N750L-51	19C9	Conv. Cath. Bypass
C23	220		C-8G-16045	SI220	D6-221		GP2K-220	19C13	Conv. Fil. Bypass
C24	1000		C-8G-13201	SI1000	D6-102		GP2L-001	19C1	RF Bypass
C25	7		C-8G-15224				N750K-7		Fixed Trimmer
C26	7		C-8G-11790		TCZ-6.8		NPOK-6.8		Fixed Trimmer
C27	5000		A-8G-13962	BPD-005	DD-502	1D5D5	811-005	29C1	Conv. Plate Dec.
C28	5000		A-8G-13962	BPD-005	DD-502	1D5D5	811-005	29C1	RF Bypass
C29	100	500	C-8F3-8	1468-0001	D6-101	5W5T1	GP1K-100	19C11	IF Coupling
C30	1000		C-8G-13201	SI1000	D6-102	1W5D1	GP2L-001	19C1	AGC Filter
C31	.1	200	C-8D-17259	P288-1	DF-104	PTE4P1		2TM-P1	AGC Filter
C32	1000		C-8G-13201	SI1000	D6-102	1W5D1	GP2L-001	19C1	1st V. IF Dec.
C33	1000		C-8G-13201	SI1000	D6-102	1W5D1	GP2L-001	19C1	1stV. IF Fil.
C34	47	500	C-8F3-109	1468-00005	D6-470	5W5Q5	GP1K-47	1FM-45	IF Coupling
C35	1000		C-8G-13201	SI1000	D6-102	1W5D1	GP2L-001	19C1	AGC Filter
C36	1000		C-8G-13201	SI1000	D6-102	1W5D1	GP2L-001	19C1	AGC Filter
C37	1000		C-8G-13201	SI1000	D6-102	1W5D1	GP2L-001	19C1	2nd V. IF Dec.
C38	1000		C-8G-13201	SI1000	D6-102	1W5D1	GP2L-001	19C1	2nd V. IF Fil.
C39	47	500	C-8F3-109	1468-00005	D6-470	5W5Q5	GP1K-47	1FM-45	IF Coupling
C40	1000		C-8G-13201	SI1000	D6-102	1W5D1	GP2L-001	19C1	AGC Filter
C41	1000		C-8G-13201	SI1000	D6-102	1W5D1	GP2L-001	19C1	3rd V. IF Dec.
C42	1000		C-8G-13201	SI1000	D6-102	1W5D1	GP2L-001	19C1	3rd V. IF Fil.
C43	47	500	C-8F3-109	1468-00005	D6-470	5W5Q5	GP1K-47	1FM-45	IF Coupling
C44	1000		C-8G-13201	SI1000	D6-102	1W5D1	GP2L-001	19C1	4th V. IF Plate Dec.
C45	1000		C-8G-13201	SI1000	D6-102	1W5D1	GP2L-001	19C1	4th V. IF Screen
C46	1000		C-8G-13201	SI1000	D6-102	1W5D1	GP2L-001	19C1	4th V. IF Fil.
C47	1000		C-8G-13201	SI1000	D6-102	1W5D1	GP2L-001	19C1	4th V. IF Cath.
C48	5		C-8G-12168	SI5NPO	TCZ-4.7	5N5V5	NPOK-5	MS-55	V. Diode Filter
C49	1000		C-8G-13201	SI1000	D6-102	1W5D1	GP2L-001	19C1	V. Det.-DC Res. Fil.
C50	100	500	C-8F3-111	1469-0001	TCZ-100	5R5T1	NPOM-100	MS-31	Fixed Trimmer
C51	100	500	C-8F3-111	1469-0001	TCZ-100	5R5T1	NPOM-100	MS-31	Peaking Note 1.
C52	.01	400	C-8D-17270	P488-01	D6-103	PTE4S1	821-01	4TM-S1	Video Coupling
C53	22			SI22	D6-220	5W5Q25	GP1K-22	19C22	V. Amp. Cath. †
C54	.1	400	C-8D-10983	P488-1	DF-104	PTE4P1		4TM-P1	Video Coupling
C55	3.3		A-8G-12495-3	SI3.3NPO	TCZ-3.3		NPOK-3.3		S. IF Coupling
C56	.004	400	C-8D-17958	P688-004	D6-402	PTE6D4	GP2M-004	6TM-D4	S. IF Decoupling
C57	5000		A-8G-13962	BPD-005	DD-502	1D5D5	811-005	29C1	S. IF Cathode
C58	470	500	C-8F3-121	1468-0005	D6-471	5W5T5	GP2K-470	1FM-35	Diode Load Cap *
C59	2000		C-8G-16049	SI2000	D6-202	1W5D2	GP2M-002	29C2	De-emphasis Note 4.

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (CONT.)

ITEM No.	RATING CAP.	RATING VOLT	RAYTHEON PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C60	5000		A-8G-13962	BPD-005	DD-502	IDSD5	811-005	19C1	RF Bypass
C61	4.7			SI4. TNPO	TCZ-4.7	5R5V5	NPOK-4.7	MS-55	Balancing
C62	.01	200	C-8D-17258	P488-01	D6-103	PTE4S1	821-01	4TM-S1	Audio Coupling
C63	.01	200	C-8D-17258	P488-01	D6-103	PTE4S1	821-01	4TM-S1	Audio Coupling
C64	.02	200	C-8D-17268	P488-02	DF-203	PTE4S2		2TM-S2	Tone Comp.
C65	.01	400	C-8D-17270	P488-01	D6-103	PTE4S1	821-01	4TM-S1	Audio Coupling
C66	.002	600	C-8D-10789	P488-002	D6-202	PTE5D2	GP2M-002	5TM-D2	Output Plate Bypass Note 5.
C67	470	500	C-8F3-121	1468-0005	D6-471	5W5T5	GP2K-470	1FM-35	Sync. Coupling
C68	.1	200	C-8D-17255	P288-1	DF-104	PTE4P1		1TM-P1	Sync. Coupling
C69	.01	400	C-8D-10761	P488-01	D6-103	PTE4S1	821-01	4TM-S1	Sync. Amp. Plate
C70	.0005	600	C-8D-10935	P688-005	D6-502	PTE6D5	811-005	6TM-D5	Vert. Sync. Coupling
C71	.02	400	C-8D-10774	P488-02	DF-203	PTE4S2		4TM-S2	Vert. Osc. Grid
C72	.05	400	C-8D-14481	P488-05		PTE4S5		4TM-S5	Vert. Discharge
C73	.33	400	C-8D-12439	P488-25		GTP4P25		4TM-P25	Vert. Sweep Coupling
C74	470	500	C-8F3-121	1468-0005	D6-471	5W5T5	GP2K-470	1FM-35	Differentiator Net
C75	470	500	C-8F3-121	1468-0005	D6-471	5W5T5	GP2K-470	1FM-35	Hor. Sync. Coupling †
C76	680	500	C-8F3-123	S1680	D6-681	1W5T5	GP2K-680	1FM-37	Voltage Divider
C77	680	500	C-8F3-123	S1680	D6-681	1W5T7	GP2K-680	1FM-37	Voltage Divider
C78	220	500	C-8F3-117	S2220	D6-221	5W5T25	GP2K-220	1FM-325	Hor. Feedback
C79	220	500	C-8F3-117	S2220	D6-221	5W5T25	GP2K-220	1FM-325	Hor. Feedback
C80	.02	200	C-8D-17268	P488-02	DF-203	PTE4S2		2TM-S2	AFC Filter
C81	.002	500	C-8D-10778	P688-002	D6-202	PTE5D2	GP2M-002	6TM-D2	AFC Filter
C82	220	500	C-8F3-117	1468-00025	D6-221	5W5T25	GP2K-220	1FM-325	Hor. MV Feedback
C83	3900	500	C-8F11-132	1464-004		1DR5D4		MS-34	Fixed Trimmer
C84	330	500		1463-00035	D6-331	5R3T4	GP2K-330	MS-34	Hor. Discharge †
C85	.001	600	C-8D-13220	P688-001	D6-102	PTE5D1	GP2L-001	6TM-D1	Hor. Sweep Coupling
C86	47		C-8G-12198	S947	D6-470	5W5Q5	GP1K-47	19C25	Hor. Feedback Note 2.
C87	.1	400	C-8D-10983	P488-1	DF-104	PTE4P1		4TM-P1	Hor. Output Screen
C88	.05	200		P288-05		PTE4S5		2TM-S5	Damper Filter ‡ Note 3
C89	150								Fixed Trimmer †
C90	470	500	C-8F3-121	1468-0005	D6-471	5W5T5	GP2K-470	1FM-35	Voltage Divider
C91	1000	500	C-8F5-125	1467-001	D6-102	1W5D1	GP2L-001	1FM-21	RF Bypass
C92	.1	400	C8D-10778	P488-1	DF-104	PTE4P1		4TM-P1	Pic. Tube Cath. †
C93	.5	200	C-8D-11270	P288-5		GT2P5		2TM-P5	Hor. Sweep Coupling
C94	.2	200	C-8D-17257	P488-22		GT4P2		2TM-22	Damper Filter †

* Some models use 560MMF in this application. Mfgrs. part # C-8F3-122.
† Not used in all models.
‡ Some models use 330 MMF in this application. Mfgrs. part # C-8F3-120.
§ Some models use .1MFD in this application. Mfgrs. part # C-8D-10771.
★ Some models use 1000MMF in this application. Mfgrs. part # C-8G-13201.
Note 1. Some models used 68MMF in this application. Mfgrs. part # C-8F3-111.
Note 2. Some models used 10MMF in this application. Mfgrs. part # C-8G-12199.
Note 3. Some models used .05MFD in this application. Mfgrs. part # C-8D-18963.
Note 4. Some models used 470MMF in this application. Mfgrs. part # C-8F3-12.
Note5. Some models used .01MFD in this application. Mfgrs. part # C-8D-10761.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	RAYTHEON PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	5000Ω	½	A-10A-18441		RTV-218	SBBT-617-S	Contrast control – panel
B	1 meg	½					Volume control and SW tap② 90KΩ – rear
R2A	50KΩ	½	A-10B-17764	Q11-123	AG-44-S	AN-31	Brightness control
B	Shaft		Not req.	Not req.	KSS-3	AK-4	Attach to R2A per instructions
R3A	100KΩ	½	A-10B-17275	Q11-128	AG-49-S	AN-40	Vert. hold control
B	Shaft		Not req.	Not req.	KSS-3	AK-4	Attach to R3A per instructions
R4A	50K	½	A-10B-17764	Q11-123	AG-44-S	AN-31	Horizontal hold control
B	Shaft		Not req.	Not req.	KSS-3	AK-4	Attach to R4A per instructions
R5A	5000Ω	½	A-10B-17768	Q11-114	AM-19-S	AN-19	Vert. linearity control
B	Shaft		Not req.	Not req.	FKS-1/4	AK-1	Attach to R5A per instructions
R6A	750KΩ	½	A-10B-18240		AG-61-S	AN-69	Vert. size control
B	Shaft		Not req.		FKS-1/4	AK-1	Attach to R6A per instructions

RESISTORS

ITEM No.	RATING RESISTANCE	RATING WATTS	RAYTHEON PART No.	IRC PART No.	IDENTIFICATION CODES ALL RESISTORS ARE ± 10% UNLESS OTHERWISE STATED
R7	470KΩ	½	C-9B1-94	BTS-470 K	Antenna Isolator
R8	680Ω	½	C-9B1-80	BTS-680	Antenna Coil Shunt
R9	10KΩ	½	C-9B1-74		RF Amp. Grid
R10	68Ω	½	C-9B1-68		RF Amp. Cathode
R11	1000Ω	20% ½	C-9B1-13	BTS-1000	RF Amp. Decoup
R12	5600Ω	½	C-9B1-71		RF Coil Shunt
R13	10KΩ	½	C-9B1-74		Converter Grid
R14	220Ω	½	C-9B1-54	BTS-220	Converter Cathode
R15	1000Ω	½	C-9B1-13	BTS-1000	Converter Decoup
R16	10KΩ	½	C-9B1-74		Osc. Grid
R17	5600Ω	½	C-9B1-71		Osc. Plate
R18	10Ω	½	C-9B1-38		Parasitic Supp
R19	10Ω	½	C-9B1-38		Parasitic Supp
R20	1000Ω	½	C-9B1-62	BTS-1000	AGC Network
R21	8200Ω	½	C-9B1-73		1st Video IF Amp. Grid
R22	82Ω	½	C-9B1-49	BTS-82	1st Video IF Amp. Cathode
R23	6800Ω 20%	½	C-9B1-13	BTS-1000	1st Video IF Amp. Decoup
R24	1000Ω 20%	½	C-9B1-13	BTS-1000	AGC Network
R25	6800Ω 20%	½			2nd Video IF Amp. Grid - See Note 6
R26	82Ω	½	C-9B1-49	BTS-82	2nd Video IF Amp. Cathode
R27	1000Ω 20%	½	C-9B1-13	BTS-1000	2nd Video IF Amp. Decoup
R28	1000Ω 20%	½	C-9B1-13	BTS-1000	AGC Network
R29	6800Ω 20%	½			3rd Video IF Amp. Grid - See Note 7
R30	82Ω	½	C-9B1-49	BTS-82	3rd Video IF Amp. Cathode
R31	1000Ω	½	C-9B1-62	BTS-1000	3rd Video IF Amp. Decoup
R32	6800Ω 20%	½			4th Video IF Transformer Shunt - See Note 6
R33	1000Ω	½	C-9B1-51	BTS-120	4th Video IF Amp. Cathode
R34	68KΩ	½			4th Video IF Amp. Screen
R35	5600Ω	½			4th Video IF Amp. Plate Decoup
R36	3900Ω	½	C-9B1-69	BTS-3900	Video Det. Diode Load - See Note 7
R37	2200Ω	½	C-9B1-66	BTS-2200	AGC Network
R38	68KΩ	½	C-9B1-84	BTS-68K	AGC Network
R39	33KΩ	½	C-9B1-80	BTS-33K	AGC Network

RESISTORS (CONT.)

ITEM No.	RATING RESISTANCE	RATING WATTS	RAYTHEON PART No.	IRC PART No.	IDENTIFICATION CODES
R40	10KΩ	½	C-9B1-74	BTS-10K	AGC Keying Grid
R41	2200Ω	½	C-9B1-66	BTS-2200	1st Video Amp. Plate - See Note 6 and 8
R42	1000Ω	½	C-9B1-62	BTS-1000	1st Video Amp. Plate - See Note 9 and 14
R43	43KΩ	2		BTS-47K	Voltage Divider - See Note 10
R44	4700Ω	2	C-9B1-70	BTS-4700	Voltage Divider - See Note 11 and 15
R45	1000Ω	10	C-9B14-1099	1 3/4A-1000	Voltage Divider - Wire Wound
R46	2.2Meg	5% 1		BTA-2.2Meg-5%	2nd Video Amp. Grid
R47	100Ω	½		BTS-100	2nd Video Amp. Cathode
R48	47KΩ	1	C-9B2-82	BTA-47K	Video Peaking Coil Shunt
R49	4700Ω	2	C-9B4-70	BTB-4700	2nd Video Amp. Plate
R50	1200Ω	10	C-9C14-1100	1 3/4A-1200	Voltage Divider – Wire Wound
R51	22KΩ	20% ½	C-9B1-78	BTS-22K	Picture Tube Grid
R52	1Meg		C-9B1-98	BTS-1Meg	DC Restorer Diode Load
R53	100KΩ	½	C-9B1-86	BTS-100K	Picture Tube Cathode
R54	1000Ω	½	C-9B1-13	BTS-1000	Acc. Anode Load
R55	68KΩ	½	C-9B1-84	BTS-68K	Voltage Divider
R56	220KΩ	20% ½	C-9B1-90		Sound IF Transformer Shunt
R57	120Ω	½	C-9B1-51	BTS-120	Sound IF Amp. Cathode
R58	2700Ω	½	C-9B1-66	BTS-2700	Sound IF Amp. Decoup
R59	27KΩ	½	C-9B1-79	BTS-27K	De-emphasis
R60	22KΩ	½	C-9B1-78	BTS-22K	Det. Diode Load
R61	47KΩ	½	C-9B1-82	BTS-47K	Tone Compensation
R62	10Meg	20% ½	C-9B1-37	BTA-10Meg	AF Amp. Grid
R63	220KΩ	½	C-9B1-90	BTS-220K	AF Amp. Plate - See Note 2
R64	470KΩ	½	C-9B1-94	BTS-470K	Output Grid
R65	680Ω	1	C-9B2-60	BTA-680	Output Cathode
R66	2.2Meg	5% 1		BTA-2.2Meg-5%	Sync. Amp. Grid
R67	47KΩ	1	C-9B2-82	BTA-47K	Sync. Amp. Plate
R68	4.7Meg	½	C-9B1-106	BTS-4.7Meg	Sync. Sep. Grid
R69	68KΩ	2	C-9B4-84	BTB-68K	Sync. Sep. Plate
R70	8200Ω	½	C-9B1-73	BTS-8200	Voltage Divider
R71	56KΩ	½	C-9B1-83	BTS-56K	Integrator
R72	1.5Meg	½	C-9B1-100	BTS-1.5Meg	Vert. Osc. Grid
R73	220KΩ	5% ½		BTS-220K-5%	Vert. Osc. Plate
R74	3900Ω	½	C-9B1-69	BTS-3900	Vert. Peaking
R75	1Meg	½	C-9B1-98	BTS-1Meg	Vert. Output Grid
R76	1000Ω	½	C-9B1-13	BTS-1000	Vert. Output Cathode
R77	47KΩ	½	C-9B1-82	BTS-47K	Voltage Divider
R78	470KΩ	½	C-9B1-94	BTS-470K	Voltage Divider
R79	220KΩ	½	C-9B1-90	BTS-220K	Voltage Divider
R80	150KΩ	½	C-9B1-88	BTS-150K	Horiz. AFC Disc. Diode Load - See Note 3
R81	150KΩ	½	C-9B1-88	BTS-150K	Horiz. AFC Disc. Diode Load - See Note 3
R82	3.3Meg	5% ½		BTS-3.3Meg-5%	Horiz. AFC Disc. Diode Load
R83	2.2Meg	5% ½		BTS-2.2Meg-5%	Horiz. AFC Disc. Diode Load
R84	68KΩ	½	C-9B1-84	BTS-68K	Horiz. Peaking
R85	150KΩ	½	C-9B1-64	BTS-150K	Horiz. MV Cathode
R86	100KΩ	½	C-9B1-86	BTS-100K	Horiz. MV Grid
R87	5600Ω	½	C-9B2-71	BTA-5600	Horiz. MV Plate
R88	240KΩ	5% ½	C-9B1-54		Horiz. MV Plate -See Note 4
R89	220Ω	½			Parasitic Supp
R90	470KΩ	½	C-9B1-94	BTS-470K	Horiz. Output Grid
R91	4700Ω	2	C-9B4-70	BTB-4700	Horiz. Output Screen - See Note 8
R92	470KΩ	½	C-9B1-94	BTS-470K	Horiz. Feedback - See Note 12
R93	240KΩ	5% ½			Horiz. Feedback - See Note 4 and 13
R94	10Ω	½	C-9B1-38	BW-½-10	Centering Network
R95	3700Ω	5	C-9C12-1104	Filter - Wire Wound - See Note 11	
R96	470KΩ	½	C-9B1-94	BTS-470K	Isolation
R97	47KΩ	½	C-9B1-82	BTS-47K	Differentiator - See Note 5.
R98	2.2Meg	½	C-9B1-102	BTS-2.2Meg	Voltage Divider - See Note 5
R99	1500Ω	½	C-9B1-64	BTS-1500	Horiz. Discharge - See Note 5
R100	5600Ω	1	C-9B2-71	BTA-5600	Voltage Divider - See Note 5
R101	10KΩ	2	C-9B4-74	BTB-10K	Voltage Divider - See Note 5
R102	5600Ω	2	C-9B4-71	BTB-5600	Voltage Divider - See Note 5
R103	2.2Ω	½	C-9C1-1067		HV Rectifier Filament - See Note 5
R104	18KΩ	½	C-9B1-77	BTS-18K	5th Video IF Transformer Shunt - See Note 5

Note 1. Some models use 47KΩ resistor in this application.
Note 2. Some models use 470KΩ resistor in this application.
Note 3. Some models use parallel resistors in this application to obtain desired value.
Note 4. Some models use 220KΩ resistor in this application.
Note 5. Not used in all models.
Note 6. Some models use 4700Ω resistor in this application.
Note 7. Some models use 820Ω resistor in this application.
Note 8. Some models use 680Ω resistor in this application.
Note 9. Some models use 3300Ω 1 watt resistor in this application.
Note 10. Some models use 47KΩ or 22KΩ resistor in this application.
Note 11. Some models use 5600Ω resistor in this application.
Note 12. Some models use 680KΩ resistor in this application.
Note 13. Some models use 1Meg resistor in this application.
Note 14. Some models use 1500 1 watt resistor in this application.
Note 15. Some models use 22KΩ resistor in this application.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	RAYTHEON PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC	680VCT	5VAC	6.3VAC	C-12A-18399	P8159 ① And P8014 ②	P3059 ① And P3945 ②	TP395 ① And F833 ②
	② 2A	.250ADC	② 3A	③ 5A				
				SEC. 4				
				6.3VAC				
				② 1.5A				

① Add series resistor to reduce place voltage.
② Mount beneath chassis.

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING DC RESISTANCE PRI.	RATING SEC.	RAYTHEON PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	NOTES
T2	180Ω	100Ω	B-12M-18241-1	A-8111 ③	A-3000 ③	TBO-1 ⑤	Vert. Block Osc. Trans.
T3	650Ω	SEC. 1	C-12M-18407-1				Horiz. Output Trans.
	tap ④ 49Ω	14Ω Tap ④ 3Ω	or C-12M-18407-2				
		SEC. 2					
		11Ω Tap ④ 9.5Ω					
		SEC. 3					
		0Ω					
T4	730Ω	9Ω	B-12C19048	A-8112 ③	A-3038	TSO-5	Vert. Output Trans.
T5A	14Ω		B-13M18888	DY-7	MD-1		Horiz. Deflection Coil
B	83Ω		or C-20I-19490				Vert. Deflection Coil.

③ Drill one new mounting hole.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	RAYTHEON PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
T6	6KΩ	2.2Ω	45Ω	.8Ω	B12C-18743	A-8114 ③	A-2932	CRO-13 ③	③ Drill one new hole.

SPEAKER

ITEM No.	RATINGS FIELD	RATINGS V. C. IMP.	RAYTHEON PART No.	JENSEN PART No.	QUAM PART No.	INSTALLATION NOTES
SP1A	PM	3.2Ω	C-18A-18745	ST-108 Mod. P6-X	6A21	
B	PM	3.2Ω	C-18A-18865 §			§ Used Model C-1401
	CONE DIA.	V. C. DIA.				
SP2A	5 7/8"	9/16"				
B	9 3/4"	3/4"				

FILTER CHOKE

ITEM No.	RATINGS TOTAL DIRECT CURRENT	RATINGS D. C. RESISTANCE	RATINGS INDUCTANCE (Ø CURRENT 1000 ma)	RAYTHEON PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
L1	.240A	35Ω	1.4 Henries		C-2326	C-2974	TR3300	① Drill one new
L2	.240A	35Ω	1.4 Henries		C-2326 ①	C-2974	TR3300 ①	mounting hole.

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	RAYTHEON PART No.	MEISSNER PART No.	NOTES
L3	Antenna Coil	0Ω	0Ω	B-20I-17143		High Band
L4	Antenna Coil	.1Ω	.1Ω			Low Band(Part of L3)
L5	RF Choke	.9Ω		A-16A-17128		
L6	RF Coil					
	Primary	.1Ω		B-13E-17140		High Band
L7	RF Coil					
	Secondary	.1Ω		B-13E-17140		High Band
L8R	RF Coil					
	Primary	.1Ω		B-13E-12046		Low Band
L9	RF Coil					
	Secondary	.1Ω		B-13E-12046		Low Band
L10	Osc. Coil	.1Ω		B-13E-17140		High Band
L11	Osc. Coil	.1Ω		B-13D-12155		Low Band
L12	Conv. Plate					
	Trap	1Ω		A-16A-18025		
L13	1st Video IF	.3Ω		A-13M-18026		
L14	Fil. Choke	.3Ω		A-20I-15609		
L15	2nd Video IF	.2Ω		B-20I-15612		
L16	3rd Video IF	.2Ω		B-20I-15612		
L17	4th Video IF	.2Ω		B-20I-15612		
L18	Grid Choke	2.3Ω		A-20I-15608		
L19	5th Video IF	.9Ω	.9Ω	B-13F-18784		
L20	Fil. Choke	1.2Ω		A-16A-17937		
L21	Peaking	1Ω		A-16A-17961		
L22A	4.5MC Trap	1.7Ω		A-20I-18746		Includes C50
B	4.5MC Trap			A-20I-19363		Alternate
L23	Peaking	22Ω		A-16A-19365	19-1923	410 Microhenries
L24A	Peaking	9Ω		A-16A-18685		
B	Peaking			A-16A-19486	19-1922	340 Microhenries Alternate
C	Peaking			A-16A-19366		Alternate
L25A	Peaking	9Ω		A-16A-18685		
B	Peaking			C-9G-18892	19-1923	380 Microhenries Alternate
C	Peaking			A-16A-19367		Alternate
L26	Peaking			A-16A-17190		
L27	Sound IF	3.1Ω		B-13A-18783		
L28A	Ratio Det.					
	Trans.	4.3Ω	.2Ω	B-13M-17273		
B	Ratio Det.					
	Trans.			B-13M-19257		Alternate
L29	Horiz. Freq.	80Ω		A-13D-16943		
L30A	Horiz. Lin.	2Ω	4Ω	A-13M-19330		
B	Horiz. Lin.			A-13M-18962		Alternate
C	Horiz. Lin.			A-13M-18961		Alternate
L31	Horiz. Size	.2Ω		A-13M-18233		

RAYTHEON MODELS C-1401, M-1402, M-1403, M-1404 (CRK 14AX21)

PARTS LIST AND DESCRIPTIONS (Continued)

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA				REMARKS
			RAYTHEON PART No.		LITTELFUSE PART No.		
			FUSE	HOLDER	FUSE	HOLDER	
M2	3AG	.250A	A-46B-18362	A-55F-18024	312.250		

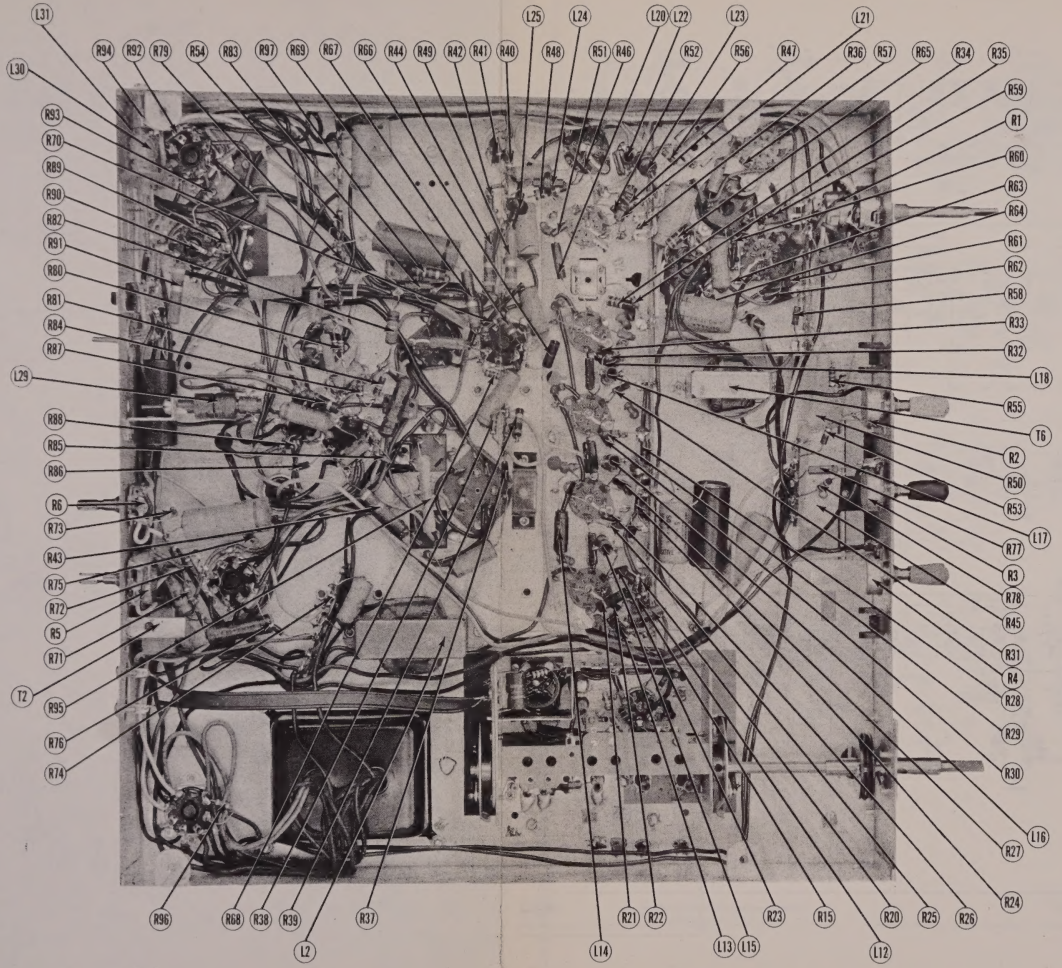
MISCELLANEOUS

ITEM No.	PART NAME	RAYTHEON PART No.	NOTES
M1	RF Tuner		
M3	Switch	A-20F-12108	Phono Off-On
M4	Focus Magnet	See Chart Below	
M5	Ion Trap	See Chart Below	
	Safety Glass	B-30M-18773	
	Escutcheon	B-2M-18768	Channel Selector
	Escutcheon	B-2M-17068	Contrast
	Pointer	A-29-18788	
	Knob	B-5B-18781-76	Tuner Models C-1401, M-1402, M-1403
	Knob	B-5B-18781-56	Tuner Models M-1404
	Knob	B-5B-17761-76	Volume Models C-1401, M-1402, M-1403
	Knob	B-5B-17761-56	Volume Model M-1404
	Knob	B-5B-17762-76	Contrast Models C-1401, M-1402, M-1403
	Knob	B-5B-17762-56	Contrast Model M-1404
	Knob	A-25M-18177	Red Rubber
	Knob	A-25M-18172	White Rubber
	Knob	A-25M-18178	Blue Rubber

PICTURE TUBE SUPPLIER INFORMATION

Due to the fact that 16RP4 and 16TP4 picture tubes from various suppliers are not directly interchangeable, different focus magnets and ion traps must be used. A Belmont Radio Corp. sticker is pasted on the original picture tubes in this chassis. The chart below lists picture tube suppliers and the corresponding focus magnets and ion traps.

SUPPLIER	BRC No.	FOCUS MAGNET	ION TRAP
Raytheon	C-55W-19341	A-55P-19336	B-16M-19337
Sylvania	C-55W-19344	A-55P-19336	B-16M-19343
Martin	C-55W-19345	A-55P-18915	B-15M-18623
Raytheon	C-55W-19362	A-55P-19336	B-16M-18623
Martin	C-55W-19362	A-55P-19336	B-16M-18623
Thomas	C-55W-19426	A-55P-18915	B-16M-19343
Arcturus	C-55W-19345	A-55P-18915	B-16M-19623



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION